

# THE IRON AGE

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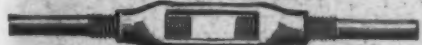
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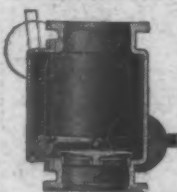
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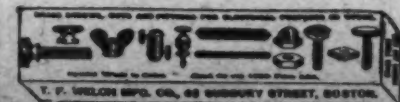
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# THE IRON AGE

THURSDAY, MAY 29, 1902.

## Puddled Iron and Mechanical Means for its Production.\*

BY JAMES P. ROE, POTTSTOWN, PA.

### Field Still Open for Puddled Iron.

Steel has occupied such a prominent position in most minds during the last 30 years, particularly since the introduction of the basic open hearth process (by which the field from which the raw material could be obtained has been so widened), that little attention has been paid

one) is not as close and lasting between steel and tin or zinc as between iron and the same materials. The field still open for puddled iron is, therefore, a large one, provided the low costs of steel manufacture can be approached.

The process of puddling is one of the most interesting in the metalurgy of iron, because the reactions and the changes they effect are apparent. Even from the writer's boyhood it has had the strongest fascination for him, which, not unnaturally, led to a close study, long ago resulting in the conviction that it could be suc-

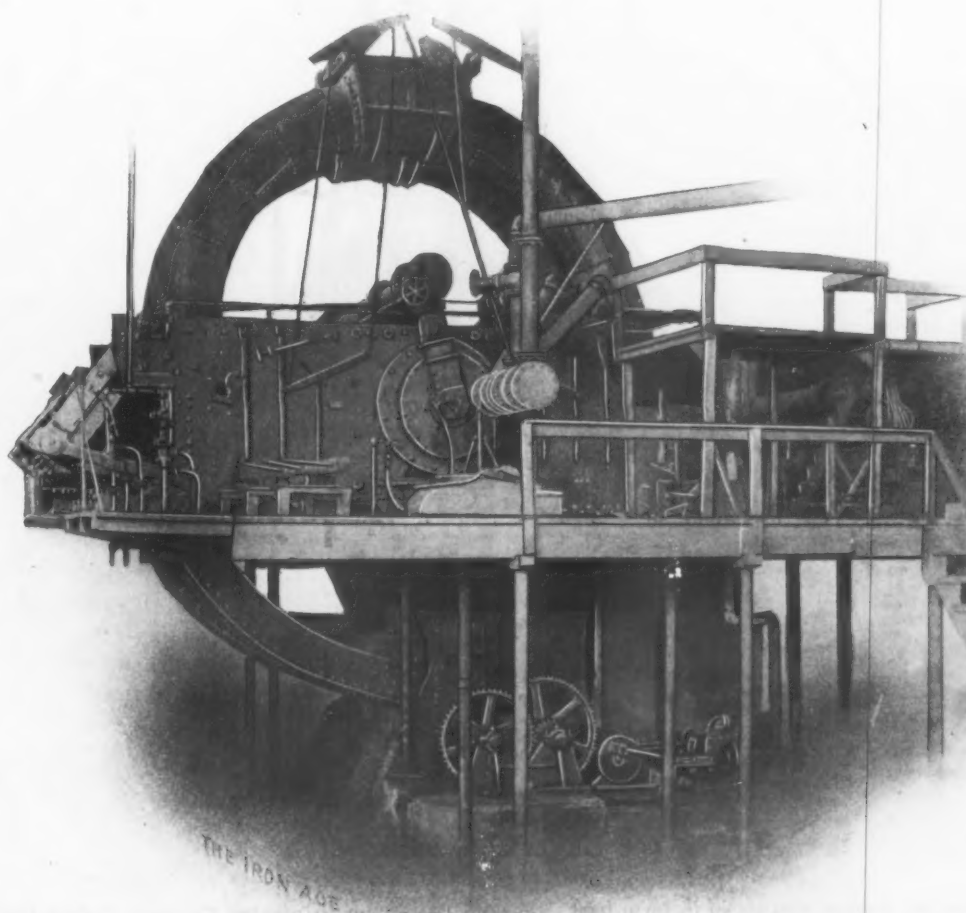


Fig. 1.—General View of Puddling Machine.

### THE ROE PUDDLING MACHINE.

to improvements in puddling iron. In fact, the general tendency seems to have been to accept the prediction that puddled iron is doomed. Events have, in a measure, justified such a forecast, due in large part to the introduction of mechanical appliances and to the system of operating with large units in the manufacture of steel, from which so much lower costs have resulted. But this general tendency has met checks in certain directions. This is notably the case where the finished product is a welded one, or is subject to oxidation, to shock or to vibration; and, as far as the writer's observation goes, the bond (which is largely a mechanical

cessfully carried out with large units and by mechanical means. That these same general conclusions have passed through other minds is shown by many past efforts, but there has been a very general suspension of such attempts during the last 25 or 30 years.

Puddling consists, essentially, in the removal of most of the carbon and silicon and part of the phosphorus and sulphur from pig iron by agitating it, while molten, in the presence of suitable cinder and gases of the right composition and temperature. These are broadly the conditions, regardless of means, up to the period of balling, which final operation may, and almost of necessity must, differ according as it is carried out by manual or mechanical means. The process now being developed

\* A paper read before the Philadelphia meeting of the American Institute of Mining Engineers.

by the writer through the enterprise of the Glasgow Iron Company at Pottstown, Pa., is being carried out in the machine or furnace illustrated by the diagrams accompanying this paper, and to which your attention is now drawn.

#### Description of Mechanical Puddler.

The general framing consists of two side plates, suspended from a trunnion on each side, carrying the whole machine, and these trunnions rest upon roller bearings supported by an elevated frame work. The side plates are produced on their lower sides, forming segments of circles, to which the operating racks are secured, which gear into pinions driven by a reversing engine. Between the side plates are four distance pieces, which form girders from one trunnion to the other. The stack bases

running across the furnace. The door is opened and closed by two side connecting rods, which connect the bottom girder of the door to a cross head operated by a hydraulic cylinder under the furnace. Parallel motion in the cross head is assured by means of pinions at each end engaging in racks fastened to the side plates of the machine. The closed door is locked by means of bolts, operated by hydraulic cylinders, which pass through the side plates and connecting rods. These bolts also aid in making tight the joints of the door.

The top, bottom and side edges of the door are made with a  $\frac{1}{8}$ -inch radius in order to crush and grind out any cinder left on the sill, lintel or jambs at the time of discharging the ball. The sill and lintel are formed with water cooled convex surfaces (extra heavy pipe),

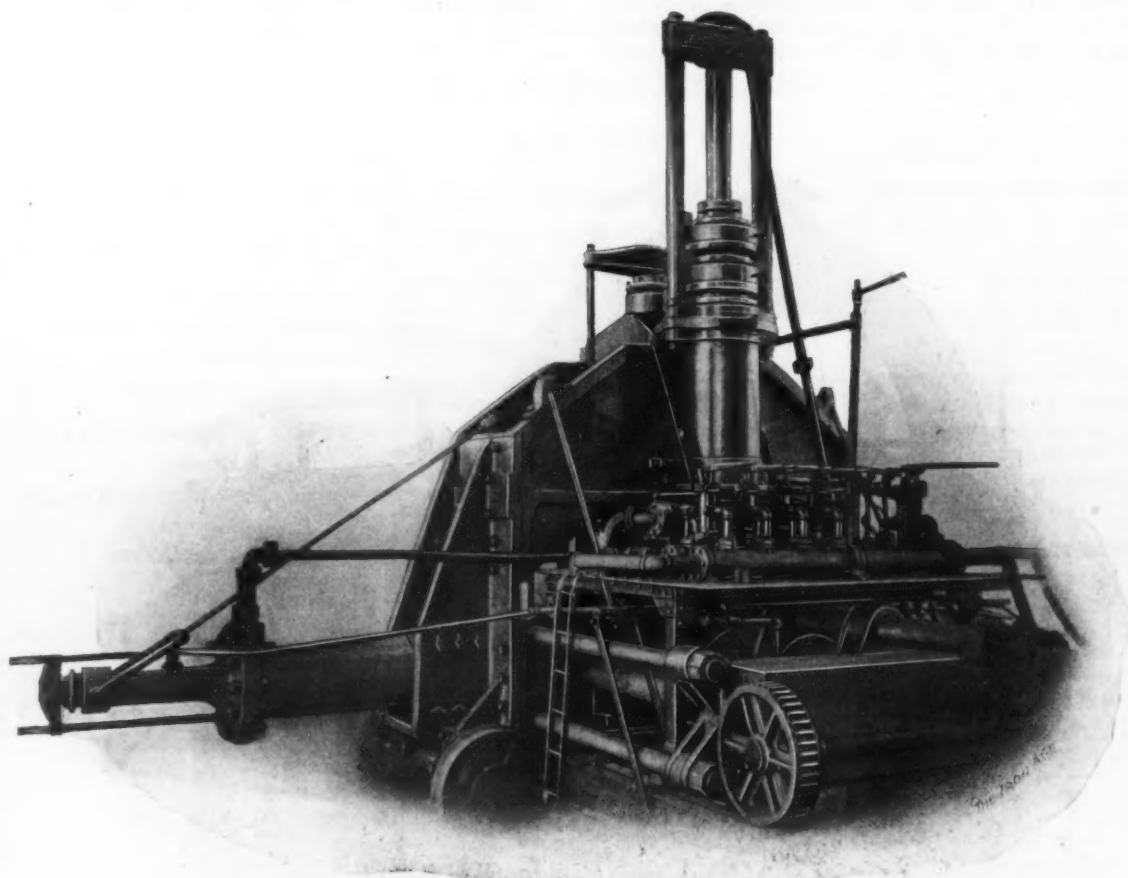


Fig. 2.—The Hydraulic Squeezer.

#### THE ROE PUDDLING MACHINE.

and the angles under the bottom also serve to form part of and strengthen the frame work.

The bottom, consisting of a series of water cooled parts, rests upon the angles referred to and supports the working bottom of magnesite brick. The same material is used to line the end and sides up to the wash line of the cinder, the sides above the cinder line, the roof and the lining of the four stacks being built of fire brick.

At present the furnace is fired by means of crude oil and blast, although coal or gas can also be used should convenience or economical reasons require it. Oil was adopted in the present instance on account of convenience of application and ease of regulation. The fuel is introduced through the two trunnions, which form efficient combustion chambers, and the flames directly impinge on each other at the middle line of the furnace, thus producing a most intense and thorough combustion. They then pass to the four converging stacks, two of which are at each end of the furnace, and by this means is assured a complete filling of the chamber.

The whole of one end is closed by a door, built up of removable sections, which is suspended from a shaft

to chill the cinder in making the joint before charging, and to make it crush and part more easily when the door is closed after discharging.

The bottom is rectangular in plan, being about 20 feet by 8 feet 8 inches in the clear, while the sides and ends are straight and stand at right angles to the bottom. The form of the furnace is, therefore, the simplest possible and the one which is the most easy to maintain. The roof is high in the middle, to give room for flame development, slopes down to direct the flame against the bottom, and rises again to give room for the wash of the bath at the end.

The machine can swing through about 65 degrees on each side of the center line of the trunnions. It is therefore a puddling furnace in which the necessary agitation for producing an intimate mixture of the molten metal and oxides is obtained by allowing them to run down hill, first in one direction and then in the other, and suddenly arresting them at the bottom. The subsequent balling of the iron, when it has come to nature, is produced by precisely the same means.

#### Similarity to Steel Practice.

It has been sought to embody in the present effort, as far as possible, the general practice in steel works; since



there is but one period in the production of iron, that from the beginning of crystallization to the squeezing of the mass, where the change from pig to wrought iron is necessarily different from that to steel.

The bottom, sides and ends of the furnace, being formed as described, are intended to possess relatively permanent characteristics and thus differ materially from the cinder bottom and sides, fixed with ore, from which much of the cinder necessary for puddling is obtained in the ordinary furnace. It is necessary, therefore, to charge molten cinder into the puddling machine as an equivalent, which is melted in an auxiliary furnace, designed for the purpose. The cinder used for

times. Then the oxidizing agent (roll scale or easily reduced iron ore) is added by means of a long spoon (made of a piece of pipe cut longitudinally in two, which is run in through one of the end peep holes, given half a revolution and withdrawn, thus evenly distributing the scale through the bath. This is continued between oscillations until in the judgment of the puddler sufficient scale has been added. This period has arrived when free iron ceases to run on the bottom, or when the bath rises for the high boil. This latter is much more active than in an ordinary puddle furnace, large volumes of carbonic oxide being emitted, which burns above the surface of the bath to carbonic acid, adding materially

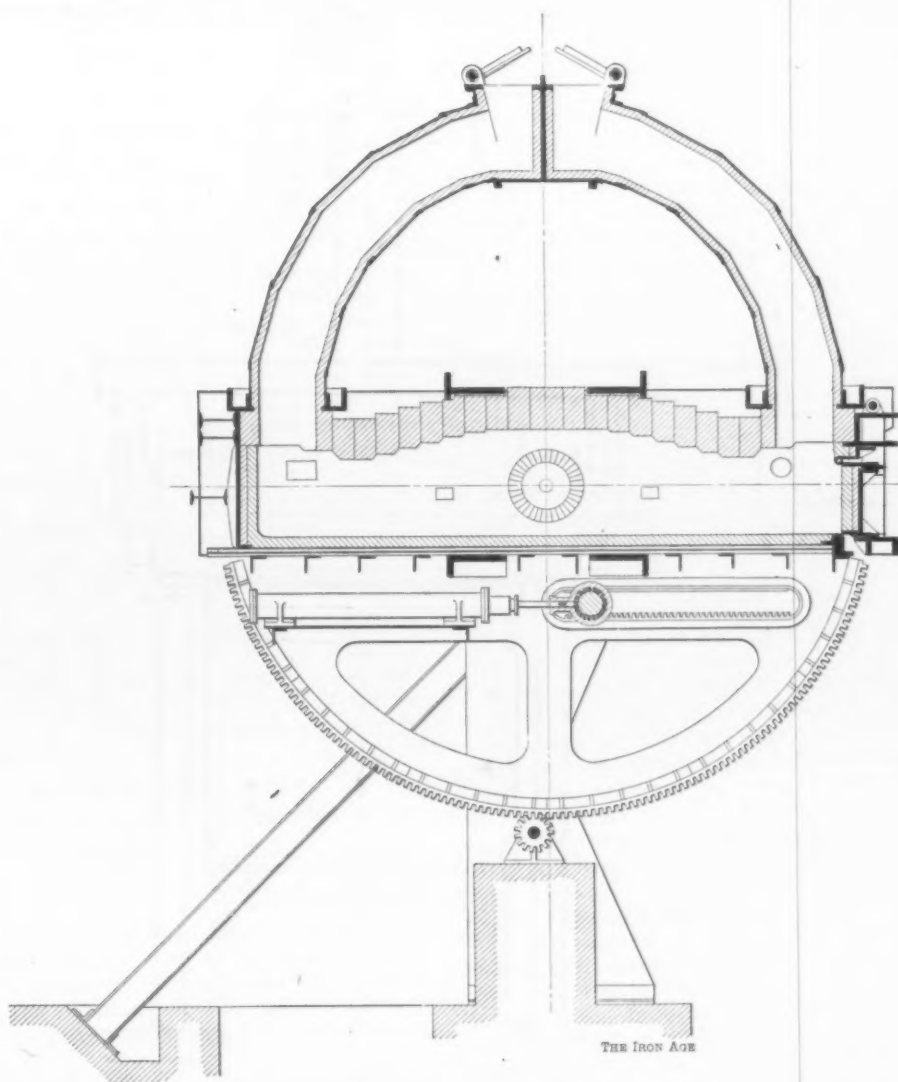


Fig. 3.—Longitudinal Section.

#### THE ROE PUDDLING MACHINE.

this purpose is the tap cinder from the ordinary furnace, and is not an active puddling agent. It serves principally to seal the door joints, cover and protect the bottom in a measure, present a medium for retaining the phosphoric acid, form a lubricant as the iron comes to nature and is massed, and, finally, to act as a welding cinder in the ball. Roll scale is added during the process to act as the principal puddling agent.

It is intended to use molten iron from a blast furnace by charging it into a mixer and drawing from that the iron as needed for the puddler, but at this time a cupola is used. This latter, however, is open to the two objections of greater cost and increased difficulty in obtaining low sulphur.

The molten iron—in the existing machine varying from 3000 to 4000 pounds—is poured through the charging hole immediately after the cinder. As soon as the iron is charged the machine is oscillated two or three

times. Then the oxidizing agent (roll scale or easily reduced iron ore) is added by means of a long spoon (made of a piece of pipe cut longitudinally in two, which is run in through one of the end peep holes, given half a revolution and withdrawn, thus evenly distributing the scale through the bath. This is continued between oscillations until in the judgment of the puddler sufficient scale has been added. This period has arrived when free iron ceases to run on the bottom, or when the bath rises for the high boil. This latter is much more active than in an ordinary puddle furnace, large volumes of carbonic oxide being emitted, which burns above the surface of the bath to carbonic acid, adding materially

to the temperature of the furnace and the bath, without any additional fuel. During the periods of scaling and boiling, as the bath descends the inclined hearth, it is most thoroughly agitated and uniformly mixed; in part by the lower strata being retarded by the friction of the bottom, the upper strata flowing over the lower, and, more largely, because as the direction of the bath is suddenly arrested by the end it turns over upon itself precisely as an ocean wave does, which is most attractive to those who enjoy watching the sea.

As the iron comes to nature and thickens the progress down the hearth from end to end becomes slower, so that the clusters pass slowly through the zone of highest temperature and acquire the heat necessary for thoroughly welding the whole together in the ball. This massing, or balling, is accomplished by increasing the angle of the hearth so that the mass slides with sufficient momentum to compress and solidify itself. This mass,

or ball, has a length about equal to the width of the machine, a width of about 3 feet and height 24 to 30 inches. When balling is completed the side rod wedges are withdrawn, and, as the front end of the machine descends, the door is opened and the mass is discharged directly into the squeezer by its own gravity. Any free cinder that may exist is discharged ahead of the mass and falls in front of the squeezer. The door is then closed and locked, the cinder is poured in and the machine is ready for the next heat.

#### The Hydraulic Squeezer.

Before following the puddled mass further it is desirable to call attention to the squeezer. The coffee mill squeezer is almost universally used to-day in conjunc-

2500 pounds per square inch, thus giving a pressure of 1800 tons on the top area of the bloom. All of the facing plates coming into contact with the mass are sectional, having spaces between them for the egress of the cinder as it is squeezed out of the mass.

The return motions of the various parts are effected by smaller hydraulic cylinders, and by similar means the bloom is pushed from under the head piece to the open front. The whole is mounted upon four wheels, which run on rails extending in front of and parallel to a series of puddling machines. One squeezer, therefore, would take the balls from all the furnaces and deposit the bloom at a point convenient to the blooming mill.

The specific object in having a movable squeezer is to avoid any delay at this important period, as it is vital

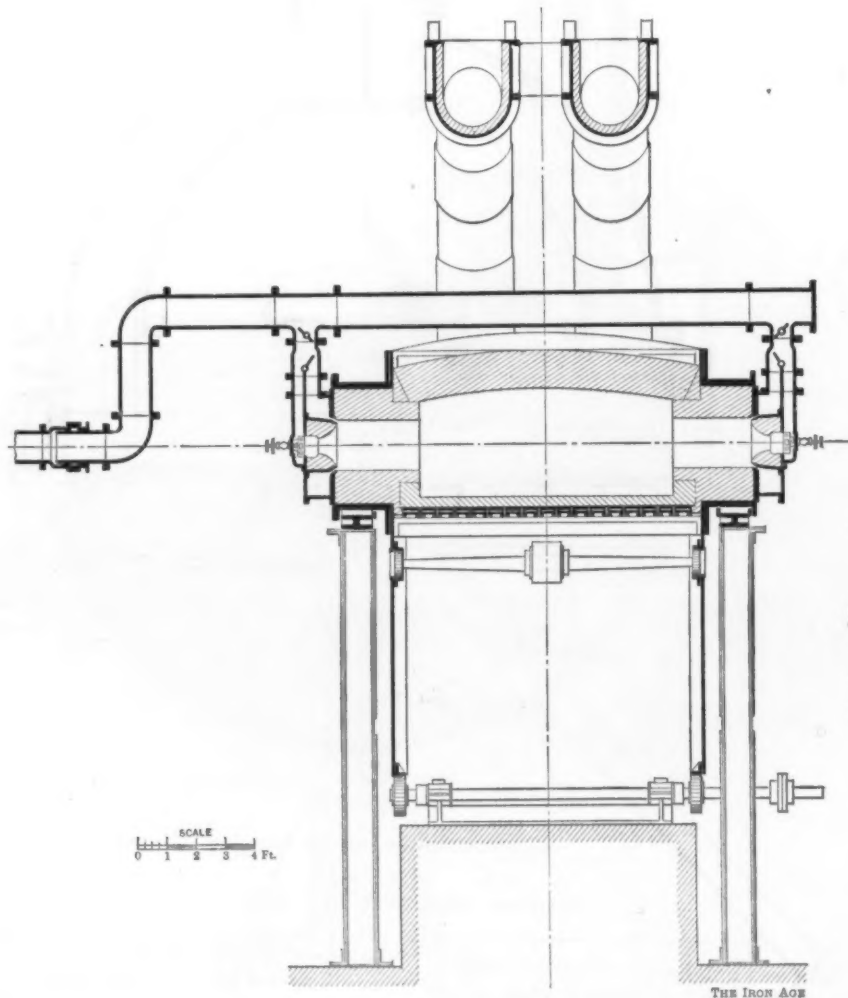


Fig. 4.—Cross Section.

#### THE ROE PUDDLING MACHINE.

tion with the ordinary process of puddling iron and working with balls weighing about 180 pounds. Although it is in this case probably as effective a mechanical device for a given end as was ever designed, it is not equally well fitted for handling masses now weighing 4000 pounds, and which in the future probably will weigh 10,000 pounds, especially since the product sought is to be of square or rectangular section, as desired. Hence a special squeezer had to be devised to meet the conditions and took the form shown in Fig. 2. Hydraulic power was selected. It is applied in one horizontal direction, by means of a front girder, operated by the cylinder in the rear, and at right angles to this by means of the two end cylinders, thus giving at this time a fixed length of 54 inches and a width of 24 inches to the bloom. The vertical pressure is applied by means of the top cylinder. In order to increase the final pressure an intensifier is mounted on the squeezer which raises the hydraulic pressure from the initial 600 pounds to

that the iron be put together before the projecting clusters cool. Besides this, rapid oxidation takes place on the ball being exposed to the atmosphere, thus causing a loss, and producing an infusible oxide, which tends to prevent welding and a thorough removal of the cinder.

The squeezer has proved very effective as regards shaping up and solidifying its product. There has been some trouble in freeing all of the blooms from cinder, but, judging from the number which have been so freed and from the fact that the trouble is not in an aggravated form in any, it is believed that by giving the cinder somewhat more freedom for egress the result will be equally satisfactory in this direction as in the others. All the operations on the bloom after it has left the squeezer are identical with those now applied to steel, thereby extending the economy of production to the finishing mills. So much for the broad outline.

#### Comparison with Hand Puddling.

Comparison seems so essential to many conclusions



that it is almost necessary to point to some features in the Cort process, as improved by Rogers, in order to obtain a just conception of the present effort.

In manual puddling the conditions throughout the bath, or heat, lack uniformity. This comes largely from the absence of thorough agitation and is shown by analysis of samples taken from various parts of the bath. It is recognized by all practical puddlers when they select a bar for testing. This lack of uniformity is cured in a large measure at the finishing mills by piling the good, bad and indifferent together, thus producing a mean that meets requirements. Hence, apart from the inability of manual means to furnish a mass of sufficient size to finish direct, the product so made would vary so much that the proportion of inferior material would condemn the whole. On the other hand, the product of the machine under discussion is relatively uniform throughout a given heat, and is, therefore, well fitted to roll as directly as possible into a finished product. This can be done, provided there is work enough—that is, a sufficient number of reductions in section—from the squeezer bloom to such product. This is shown by the samples of plates exhibited, together with an etched section of a bloom and a slab made by this process. There are also shown samples of iron plates and an etched section of squeezed puddle ball made in the ordinary way. The samples go far to combat the usual statement that repeated working and heating of iron is necessary to produce a good product. This statement is illogical. It is impossible to conceive that there can be any inherent virtues in a second or third heating and piling, other than accomplishing something that had not been done in the prior heatings.

The requirements in the material for good results in rolling or forging iron or steel are homogeneity, mass enough to give opportunity for the necessary work (reduction of section) and to retain the temperature, and pressure enough (heavy and effective machinery) to accomplish the desired end before the necessary temperature is dissipated. This has been confirmed in modern steel production.

The puddler and squeezer, although presenting some of the shortcomings inevitably associated with being the first of their kind, have in the main fulfilled their mission of development satisfactorily, which is shown by the following summary of results in conjunction with the samples exhibited.

#### Results Obtained.

The pig iron used has varied in composition as follows:

Sulphur .....	0.03	0.26
Phosphorus .....	0.50	1.35
Silicon .....	0.60	1.40

Many of the heats have shown a satisfactory elimination of phosphorus, and, as was to be expected, this elimination has been shown to depend upon the composition and condition of the cinder and the manipulation of the bath during the period before the iron comes to nature.

Some elimination of sulphur has been shown, but as a general rule this element should be kept as low as possible in the iron charged. Those heats which have been made with iron taken directly from the blast furnace have shown the special advantage of such a practice in this respect.

The cinder used has a normal composition of about sulphur 0.30, phosphorus 1.73 and silica 20.00. Ordinary roll scale was used for the additions.

The weight of pig iron charged has generally been between 3000 and 4000 pounds, although some heats as low as 2500 pounds have been made, the average being 3500 pounds.

The weight of cinder has varied considerably, but it has been shown that about 500 pounds per ton of iron (22 to 25 per cent.) is the proper amount. The amount of scale used has run from 350 to 550 pounds, and depends entirely upon the individual characteristics of the heat, such as the character of the pig iron, the temperature of the bath, &c., just as it does in the ordinary process.

The time required to make a heat has, of course, varied very much, especially at first, running from 24 to 102 minutes. The average duration is 48 minutes, but it

is believed that 40 minutes for a 4000-pound charge will be the average under regular running conditions. This would mean from 15 to 18 heats per turn of 12 hours, or a product of from about 27 to 32 tons of rolled slabs or blooms.

While some heats have shown a loss and others a gain between pig and slab, the indications are that the weight of the rolled slab will be about equal to that of the pig iron charged, or will only slightly exceed it. The loss from slab to finished plate, however, runs between 5 and 6 per cent., thus coming close to that of steel. The difference is largely due to the fact that the iron is heated to a higher temperature, with a consequent higher heating loss. This difference in finishing loss is, however, more than compensated for by the fact that all of the iron made is in the slab, there being no crop ends such as are necessary when steel slabs are rolled from ingots. The loss from pig iron to finished plate is, therefore, from 5 to 6 per cent. in this process, while in the ordinary puddling process it is about 16 per cent.

The physical tests made on this material show better results than those from plates of similar analysis made from ordinary puddled iron. For instance, the samples shown from plates containing sulphur 0.018, phosphorus 0.10 and carbon 0.05 give an ultimate strength of 51,000 pounds per square inch, with an elongation of 24 per cent. in 8 inches; while that from a plate containing sulphur 0.019, phosphorus 0.13 and carbon 0.10 gives an ultimate strength of 62,000 pounds per square inch, with an elongation of 23 per cent. in 8 inches. The latter is a material which may again open to iron the large field of shipbuilding. The above results, together with the entire absence of blisters, show the high grade of product obtained.

It is, of course, somewhat difficult to estimate the probable cost in a properly organized plant from data obtained in working a single machine under experimental conditions; but the indications are, and it is confidently believed, that slabs and billets will be produced at a cost not exceeding that of ordinary steel.

#### Drawback on Cast Iron Pipe.

WASHINGTON, D. C., May 27, 1902.—The Treasury Department has prepared regulations for the allowance of drawback on cast iron pipe manufactured from imported pig iron or from scrap from imported pig iron mixed with imported pig iron. It will be noted that this combination of raw materials presents a new problem in the allowance of drawbacks, and to that extent indicates a tendency on the part of the Treasury officials to liberalize their rulings with regard to this class of rebates. The regulation is as follows:

On the exportation of cast iron pipe manufactured wholly from imported pig iron or from scrap from imported pig iron a drawback will be allowed equal in amount to the duties paid on the imported material so used, less the legal deduction of 1 per cent. The drawback entry must show the quantity of material exported, and, furthermore, in addition to the usual averments, that the exported pipe is manufactured of material and in the manner set forth in the manufacturers' sworn statement as made from their records, which must be filed with the collector of customs at the port of exportation and be officially verified prior to the liquidation of the entries by comparison with the books of record, which shall at all reasonable times be open to the inspection of the customs officers. In the liquidation of the entries the basis of drawback shall not exceed 105 pounds for each 100 pounds of exported material.

W. L. C.

The corporation of the city of Launceston, Tasmania, is calling for tenders, returnable September 15 next, for polyphase generating transmitting and distributing plant and apparatus, transforming apparatus, reconstruction of existing plant and inclosed arc lamps and accessories. Launceston is the most up to date Australian city in the matter of electric lighting, power being economically derived from a cataract at the head of a gorge about a mile and a half from the city.

## Lake Iron Ore Matters.

### The Tug Strike.

DULUTH, MINN., May 24, 1902.—Two weeks ago this correspondence called attention to the lake tug strike and the intimate connection of the United States Government therewith, showing how the Government might end the present strained situation. Action along this line is now being inaugurated and some decisive moves will probably be made. The strike is not affecting ore shipments as seriously as at first, but that it will impede them annoyingly until closed is beyond question. Shipments are now, however, very large and the month will end with a surprising total. Except the annoyance of a shortage of tugs, everything is moving along smoothly at the shipping end of the lakes.

### Mining Policy of the Steel Corporation.

The Auburn mine of the Minnesota Iron Company (United States Steel Corporation) on the Mesaba range has been closed down indefinitely, but doubtless for a long period. The pumps have been lifted and the big open pit is gradually filling with water. The Auburn is now a fee property of the corporation, and the close is perhaps in line with a reasonable policy to utilize for the present the leases carrying a fixed charge and minimum. Fee mines and leases from the State, which latter are exceptionally favorable in the matter of a minimum annual charge, are being allowed to lie quiet until such time as the corporation may see fit to operate them.

The steel corporation, through all their mining interests on the Mesaba and Vermillion ranges own in fee an immense amount of ore in the ground that has never been disturbed and may not be for many years. They also own a vast acreage of undeveloped lands on the mineral formations that may upon exploration be found of value. On these no explorations are being undertaken, and no explorations are being pushed upon any lands held in fee or small minimums. Partially explored lands in township 58-20 alone, secured with the Lake Superior Consolidated Iron Mines, are of great value, while in townships east of that lands taken through the Minnesota and Oliver iron companies are known to be worth much. On the Vermillion range the Minnesota Iron Company had a vast acreage of selected lands, while the Oliver Iron Mining Company had considerable, possibly more carefully selected but of less acreage. The time will come when these lands will be thoroughly tested. In the case of the Auburn, above mentioned, the probability is that when reopened it will be mined on a different system, and through an open cut via the Great Western, which was before consolidation the property of a rival interest, but is now owned jointly.

The Auburn is interesting as the first mine operated by the milling system to have a steam shovel loading ore to be handled to outside by a stationary engine. A shovel was stationed beside a belt line in the bottom of a pit, about 100 feet deep, and loaded cars that were trammed by mules to a pocket in the shaft. The cars were side dump and the pocket was large, so that tramping could be steady. Two skips of 5-ton capacity each were hung in balance, and as high as 40 skiploads have been hoisted in an hour. The mine, through this single shaft, has produced 80,000 tons in a month, and last year, mining almost entirely in the open season, hoisted 427,000 tons. This system of mining is destined to grow in the estimation of mining men, and to be common where conditions favor. It is in use at No. 3 shaft of the Fayal, where there is a stripping of exceptional thickness, and is very satisfactory there.

### General Mesaba Range News.

Preliminary work on the Wacouta property of the La Belle Iron Works, located just east of Mountain Iron, has been stopped for the present, on account of some difficulty over surface rights of ground on which to dump overburden. Clearing had been done, a building or two was half erected and an outfit of machinery was on hand. At the Stevenson mine, west of Hibbing, two 105-ton shovels are mining against the breast of ore,

with a stope of about 35 feet. They are in such position that but one, or at most two, cars can be switched to the shovels at one time, which delays matters. A third shovel of similar great size is expected shortly. Ore cars are scarce and the largest day's output so far has been under 7000 tons. Two shovels are engaged in stripping, extending the area westward longitudinally. Considerable stripping will be done later near the mouth of the pit.

The Mahoning mine, at Hibbing, presents an interesting contrast to almost every other property on the range. A Sunday quiet prevails there, with an occasional man in sight about the mine, but three shovels are working and the daily product is such that an output of 1,000,000 tons will be easy. The mining company will do some stripping later. At the Burt, also at Hibbing, the Minnesota Iron Company are stripping what will ultimately be an enormous area. One million yards are to come off the surface, which varies from 22 to 40 feet. Two outside firms, new to the stripping business in iron regions, have taken contracts on the Mesaba range—namely, Halvorsen, Richards & Co., at the Morrow, and Butler & Ryan, on the Kinney. Both mines will be opened at once, one by Sellwood interests and the other by the Republic Iron & Steel Company.

### Menominee Range.

Menominee range shipments are very large, chiefly to Escanaba, though the Chicago, Milwaukee & St. Paul road is taking a large proportion of ore to its new dock at North Escanaba. At the Great Western, Crystal Falls, water is being bailed at the rate of 1300 gallons a minute. At the Monongahela, belonging to Jones & Laughlins interests, the shaft is being sunk to 300 feet, to determine the existence of an ore body of sufficient size. The company have a drill on lands adjoining the Dunn mine. At the Michigan, of the United States Steel Corporation, they are loading a stock pile that has been on surface for three years. At the Columbia the Crerar-Clinch stock pile, on surface a long time, is being loaded out. The Armenia is being reopened by the caving system and the immense pillars that were left in the old mine are all to be removed. Water that has always given great trouble there is being drained off and pumped up. Work is to start at the Flewelling, an old exploration a few miles above Amasa. It is on the Hemlock formation, and thin seams of ore were found in a shaft 75 feet deep. Explorations will be undertaken on lands adjoining the Hemlock along the formation.

### Important Sault Contracts.

A contract will be let shortly by the Lake Superior Power Company (F. H. Clergue and associates) for a third power canal at the Sault. It will be on the Canadian side of the river, where No. 1 canal is located, and will furnish about 40,000 horse-power. There will be 400,000 cubic yards of earth and 600,000 yards of stone in the canal excavation. Work will commence about the time the Michigan-Lake Superior Power Company are ready to turn on water. Another contract to be let by the same interest is for a large amount of railway building on the Manitoulin & North Shore road, running in the Sudbury district. The ultimate purpose of this road, it seems to an onlooker, is important in that it will give the Clergue interests an outlet to the Atlantic seaboard independent of other connections and of value for export goods made at the Sault mills and workshops. There is little doubt that the Canadian Northern, the Manitoulin & North Shore and some other roads will make a through system of great importance to the Dominion.

### Copper District.

In the copper country of Lake Superior arrangements for meeting what is recognized as a permanent condition are quietly in progress. The conviction is general that 13 to 13½ cent copper is about the best that can be expected, and retrenchments are in progress at a number of mines, especially those mining ore in which the percentage of metal is low or the methods of selling, &c., have been unfortunate. Economies in production are being made by improved machinery more than by lowered wages; considering the situation in the



adjoining iron ore mines the latter is difficult. The new south range mines, Baltic, Trimountain and Champion, are wheeling into line with speed and are increasing their facilities with each month. The oldest south range property, Atlantic, has found the noted Baltic lode in such position that it will have a mile of that rich producing amygdaloid on its land. This is expected to make the mine very much more important than in the past. It has been running on rock averaging about 0.60 to 0.65 of 1 per cent of metal, while the Baltic lode south of it is nearly three times as rich. The Ontonago mines are coming forward with speed, and Mass, Adventure and Michigan will probably be important producers. Mass is already so. They are all rich in large masses and in silver. Explorations have to some extent recovered from the sudden shock of the decline in copper, and some work of this nature is under way throughout the region. In spite of newspaper reports to the contrary, there is nothing yet found in the Wisconsin end of the Keewenaw formation that deserves note as of particular interest.

D. E. W.

### The Nernst Lamp.\*

BY MURRAY C. BEEBE, PITTSBURGH.

Dr. Walter Nernst of Goettingen, Germany, was the first to utilize as an illuminant the fact that certain of the refractory oxides of metals of the rare earths are

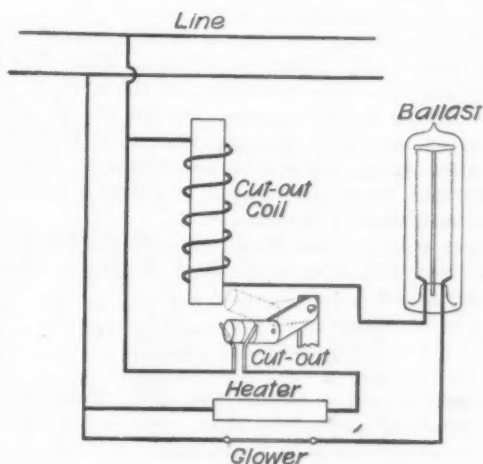


DIAGRAM OF A SINGLE GLOWER LAMP.

conductors of electricity when hot. This important discovery was brought to the attention of Mr. Westinghouse, who was quick to recognize in it wonderful possibilities for improving existing methods of illumination. Since 1897, when Dr. Nernst first announced his discovery, the work of putting the new invention into commercial shape has been quietly but vigorously pushed to completion.

The nucleus or light giving element of the lamp has been termed the "glower." It is made by expressing from a die a dough made up of the oxides mentioned, mixed with a suitable binding material. The porcelain like string thus made is cut into lengths, roasted, and suitable terminals are attached. The finished glower in the standard 220-volt lamp is about 0.025 inch in diameter and about 1 inch long. They operate in the open air, which stamps them immediately as something entirely different from the ordinary incandescent lamp filament you are used to. Further, they will withstand a much higher temperature than the carbon filament of the incandescent lamp, which accounts for the correspondingly greater efficiency and the better color possessed by Nernst light. Curiously enough, these glowers are insulators when cold, and hence require to be heated in some manner before they will conduct electricity sufficiently well to maintain themselves at a light emitting temperature. The construction of a com-

mercial and entirely automatic lamp then requires the addition of some heating device to provide for this initial heating. Heaters for this purpose are made by winding fine platinum wire upon thin porcelain tubes. Platinum is quite capable of withstanding the intense heat in the vicinity of the glower and, after all, its cost for this purpose is not great when it is considered that a large percentage of the platinum may be recovered from the worn out heaters. Referring to the drawing, two or more of these tubes are so placed that current from the line traverses the heater wire through the contact of the cut out, thus heating them to a good white heat.

The proximity of the glower to the heater soon results in the glower becoming a conductor, and the current then passes through it also. When this has reached a predetermined amount an electro magnet or cut out coil has become strong enough by virtue of the glower current passing through it to attract the contact piece or armature of the cut out, which heretofore has closed the heater circuit. This disrupts the heater current, leaving only the glowers in operation, until the next time the lamp is turned on. Ordinarily, about 30 seconds is the time required for starting. Opening the switch which controls the circuit allows the cut out armature to drop into place again, thus connecting the heaters ready for operation.

You already know that the glower becomes a better and better conductor as its temperature, or the current passing through it, is increased. This unstable condition of things would almost instantly result in broken glowers were not a steady resistance placed in the circuit of each glower to choke down the current before it can reach an amount dangerous to that glower. This is accomplished by what has been termed a "ballast," the name signifying its function of holding down the current. Iron possesses exactly the opposite characteristic of the glower in that its electrical conductivity diminishes with increase of temperature. This is true of all metals, but iron possesses it to a remarkable degree when at a dull red heat. The size of the iron wire used in our standard ballast is exceedingly small, about 0.045 mm., or less than 0.002 inch, and this is somewhat smaller than a human hair. To prevent oxidation of this fine wire it is inclosed in a small glass envelope, which is filled with an inert gas, the complete ballast resembling somewhat a miniature incandescent lamp.

Lamps have been developed in the following sizes for operation on alternating current circuits only. Although the lamp is adaptable to operation in any position, the present line of manufacture is directed toward lamps to be hung in a downward vertical position, mainly because of the advantages possessed by a gravity cut out.

Candle power.	Volts.	No. of glowers.	Style.
50	110	1	Indoor.
50	110	1	Outdoor.
50	220	1	Indoor.
50	220	1	Outdoor.
100	220	2	Indoor.
170	220	3	Indoor.
400	220	6	Indoor.
400	220	6	Outdoor.
2,000	220	30	Indoor.

The use of gravity rather than of springs or other devices in the cut out has resulted in making this, the only moving mechanism in the lamp, a thoroughly reliable device.

The main features are alike in all lamps. The various sizes are made by assembling one, two, three or six standard glowers with their requisite ballasts, &c. The replacement of perishable parts has been simplified by the use of aluminum plug contacts on glowers, heaters and ballasts, doing away with corroding contacts and troublesome screws. Convenience of making renewals is still further facilitated by having glowers and heaters mounted upon an easily removable piece called the holder, which may be plugged into place very much as you are accustomed to replacing an incandescent lamp in its socket. In fact, the housing of the lamp which contains the ballasts and cut out may be considered as a special Nernst lamp socket, and with a few spare holders in stock the lamp inspector has only to pass from lamp to lamp, changing holders where neces-

\* Abstract of paper read before the New England Cotton Manufacturers' Association, Boston meeting, April, 1902.

sary and then repairing the old ones at odd times and where proper facilities are at hand. The lamps contain no combustible material whatever and all parts are assembled in a substantial manner.

At the Westinghouse shops at East Pittsburgh there are in operation 500 lamps. The majority of these are operating upon 3000-alternation (25-cycle) circuits. The average life of the glowers on 7200 alternations (60 cycles) is about 800 hours; on 3000 alternations the life is about 400 hours. Operation upon 3000 alternations is a field into which the arc lamp has no access, and the use of incandescent lamps, especially of low candle power, on this frequency is particularly fatiguing to the eye, because of the effort which the retina makes in following the fluctuations of light intensity with the alternating current wave. The fact that Nernst lamps are operative on 3000-alternation circuits assumes considerable importance because no unnecessary complications are introduced into the power plant, where it is desirable to use this frequency for both lighting and power transmission. Alternating current circuits of 220 volts (nominal) are best for operating Nernst lamps. They are furnished to operate upon any voltage in this neighborhood.

### The Diamond in Wire Drawing.

BY S. BARNETT.

The most desirable lots of diamonds for making diamond draw plates are obtained from Hamburg and London, in what are called "mixed parcels" of 50 to 200 carats—natural stones, cuttings and bort. In New York City it is difficult to get larger parcels than 5 to 30 carats in one lot. The dealers in diamonds, who sell to the manufacturers of diamond dies, are unable to select the stones that will suit the buyer, and the diamonds are, therefore, sold subject to inspection, and if the "parcel" or part of it is not accepted, it is returned.

Natural stones are preferred for draw plates. When they are too large to manufacture into only one die they are split in the direction of the line of their cleavage, to make slabs, such as are considered best for die making. Flat stones are more desirable than round. Natural stones for this trade are such as have been rejected for use as jewels, and can therefore be sold at lower prices than unblemished stones. Prices have ranged from \$5 to \$20 per carat during the last ten years. Since the closing of the diamond mines in Africa, on account of the Boer War, \$10 per carat is a low price for diamonds.

The unpolished stones are diamonds which cannot be used for jewels on account of defective coloring, blemishes, flaws, or foreign substances imbedded in the stone. Such imperfections do not affect the usefulness of the stone for diamond draw plates, unless a flaw in the stone is so situated that the diamond will split or break when being drilled.

Thick round stones are too thick to drill economically, and are not broad enough in surface to split into slabs. The draw plates are made 1-16 inch thick, when suitable slabs can be obtained, and as broad a surface as the stone will admit of. The strength of the diamond for use and wear in wire drawing lies more in the surface area than in the thickness.

Polished stones are those which have been cut and polished for jewels, but have been rejected for not being of the right shape, or for any flaws not discovered before polishing. Sometimes a stone is rejected for a jewel because it is too hard to polish—such a stone makes the best draw plate, although requiring extra time to drill the hole.

First quality stones, in the form of slabs, cleavages and endings, are clear polished pieces or ends cut from large diamonds when being cut and shaped for brilliants and rose diamonds. They are of the same value as natural stones for die making, and are very desirable, as they are flat, smooth and polished on one, if not on both sides. The shapes preferred are round, square or triangular. A triangular piece is especially useful, as it can be used as a drill before being used as a die, in doing the first breaking out on the surface of a diamond

preparatory to the finer drilling. This shape also holds firmly in the setting.

Second quality stones, like bort, carbon or black diamonds, are inferior stones, suitable only for saw cutting, die making or crushing into diamond powder, and are usually sold at lower prices than first quality stones.

Splints, points and needles are thick and long, and useful in the first stages of diamond drilling—breaking out the surface for the bearing of the die. Prices are one-half to two-thirds the price of first quality stones. They come from the diamond cutters, being pieces cut off large diamonds.

The weight of diamonds required for different sizes of copper wire is as follows:

Diameter of hole.	Weight of diamond. Carats.	Diameter of hole.	Weight of diamond. Carats.
0.055 inch.....	5	0.017 inch.....	1/2
0.050 ".....	4	0.016 ".....	1/2
0.045 ".....	3	0.015 ".....	1/2
0.040 ".....	2 1/2	0.014 ".....	1/2
0.035 ".....	2	0.0135 ".....	1/2
0.032 ".....	2	0.013 ".....	1/2
0.028 ".....	1 1/2	0.011 ".....	1/2
0.025 ".....	1 1/2	0.010 ".....	1/2
0.023 ".....	1	0.0095 ".....	1/2
0.020 ".....	1	0.009 ".....	1/2
0.018 ".....	1/2	and under.....	1/2

#### Drawing Copper Wire in Diamond Dies.

At one mill the drafting of copper wire through diamond draw plates is said to commence at No. 14, by using a 5 to 8 carat diamond. When the diamond becomes worn it is cut into smaller pieces for draw plates for the finer sizes of wire.

At other mills copper wire is drawn in steel dies to "20 W. & M. gauge" for process wire. From this point the drafting, and also the selling of the wire, is nearly always by the B. & S. gauge. At No. 20 B. & S. or the nearest convenient size the drafting is through diamond draw plates, and is done on continuous wire drawing machines, on which wire can be drawn 6 to 12 drafts at one continuous operation.

Copper wire can be drawn through diamonds in 12 drafts from Nos. 20 1/2 to 30 B. & S. gauge, with the following drafts:

Inch.	Inch.	Inch.	Inch.
0.0289	0.022	0.0161	0.0131
0.0266	0.0199	0.0145	0.011
0.0241	0.0179	0.01321	0.010

The wire is now so slender and easily broken that the drafts must be made very light, and 13 diamonds are used to reduce the wire from 0.010 to 0.003 inch, as follows:

Inch.	Inch.	Inch.	Inch.
0.009	0.0064	0.0048	0.0036
0.0082	0.0059	0.0043	0.0033
0.0075	0.0053	0.0039	0.003
0.0065			

At this point still lighter drafts are used. 0.002-inch is the smallest size made commercially. It is exceedingly difficult and very expensive to make copper wire smaller than 0.002-inch, as a diamond is required for every 0.0001 or 0.0002 inch, and there is a great length of wire to every ounce in weight. One lot of wire for exhibition, as near 0.001 inch as possible, was given the following drafts from 0.0022 inch wire from stock:

Inch.	Inch.	Inch.	Inch.
0.0022	0.002	0.0016	0.0013
0.0021	0.0018	0.00145	

The life of a diamond die on copper wire may be from six months to a year at one size, if the stone is of good size, hard, smooth and well drilled.

Annealed (oxidized) copper wire will quickly cut out any die except a diamond. In the following table of drafts on copper wire, commencing with sizes Nos. 21 to 31, sizes Nos. 21 to 24 are usually bright wire from the drawing blocks, but sometimes are wires with an ordinary annealing. Commencing with No. 27 the wire is all bright annealed without contact with air:

No. 31 copper wire is drawn 11 drafts from No. 21 B. & S. gauge.			
" 32	" 12	" 21	" "
" 33	" 11	" 24	" "
" 34	" 12	" 24	" "
" 35	" 12	" 26	" "
" 36	" 12	" 27	bright annealed.
" 37	" 11	" 28	" "
" 38	" 12	" 28	" "
" 39	" 10	" 31	" "
" 40	" 12	" 31	" "



The production of one man daily is given in the following table. One operator may run one, two or even more machines, and each machine may have from one to four or even more sets of dies, with a different wire in each set of dies. The fine sizes of wire are, if wanted, run directly onto the small spool on which the wire is to be shipped:

Production of One Operator Daily.—B. & S. Gauge.

No.	Pounds.	No.	Pounds.
22.....	1,100	32.....	345
23.....	1,000	33.....	270
24.....	900	34.....	175
25.....	870	35.....	138
26.....	700	36, 8-draft machine, 6-	
27.....	535	inch blocks.....	130
28.....	375	37.....	110
29.....	360	38.....	90
30, 12-draft machine..	350	39.....	60
31, 6-draft machine..	433	40.....	45

Drawing Steel Wire in Diamond Dies.

Only two wire mills in the United States are said to be using diamond draw plates for making fine sizes of steel wire. They are used here, not as being economical or for producing a better quality of wire than with steel dies, but they seem to be necessary for wires, such as card wire and weaving wire, which must be exceedingly accurate to size and not out of round. No way has yet been discovered to produce these wires up to requirements except by the use of the diamond. There is a great difficulty in keeping a steel die on size for more than one coil of wire at No. 33 and finer, and the die has then to be hammered up. The die hole is also difficult to make.

No. 29 is the coarsest size wire drawn in diamonds. Experiments were at one time made to use diamonds for drawing Nos. 20 to 25 low carbon steel for covering wire for winding piano strings, but not with success, as the low carbon steel at these sizes seemed to wear out the dies much faster than at finer sizes. At these finer sizes, although a diamond draw plate may last a year and stay on size for drawing copper wire, the life of the die on steel wire is very short, generally averaging three days before the die gets off size and has to be polished out to use for the next larger size. A diamond die will not produce steel wire with as smooth a surface as a steel die, there is more of a cutting action on the surface of the wire, and such wire is more difficult to tin, for tinned wire, than wire drawn in a steel die.

No. 29 is the coarsest size steel wire drawn in diamonds, because the economy in using the diamond here reaches its limit. The cost of polishing out a diamond to use at larger size than No. 29 is greater than the total cost per 100 pounds for drawing in steel dies. When a die becomes worn at No. 29 for drawing steel wire it is, therefore, afterward used for drawing copper wire or laid aside to be sold at a reduced price to other manufacturers who draw copper and brass wire. Worn out dies on copper wire are also saved in the same way, and either sold or the diamond is ground to powder to use in drilling diamonds.

Steel wire drawn through diamonds is always drawn on a continuous machine, using one or two diamonds for the last two drafts and a small steel draw plate for the earlier drafts. By this it is not meant that a diamond draw plate cannot be used on an ordinary wire block. One skillful wire drawer in Worcester uses a diamond die on one of the blocks of an ordinary 30-block wire drawing frame, for giving one draft in diamond for sizes Nos. 29, 30 and 31, placing the die near enough to the coil of wire in the unreeling jar so that enough of the drawing liquor will remain on the wire to keep the die wet and cool all the time.

For Nos. 30 and 31 low carbon wire (weaving wire), to be drawn on a continuous machine, the wire is started at No. 25 in steel dies and only the last draft is given in diamond, when the wire is brought to exact size. The drafts are: Nos. 25, 26, 27½, 29, 30, 31.

The following table shows the drafts in diamond dies in drawing steel weaving wire:

Drafts in Diamond Dies for Drawing Steel Weaving Wire.—0.07 to 0.10 Per Cent. Carbon Steel.

	Finished size.				
	No. 32.	No. 33.	No. 34.	No. 35.	No. 36.
	Inch.	Inch.	Inch.	Inch.	Inch.
Commence with No. 25.....	0.020	0.020	.....	.....	.....
First draft: Steel die to....	0.018	0.018	.....	.....	.....
Second draft: Steel die to....	0.0175	0.0175	.....	.....	.....
Third draft: Steel die to....	0.015	0.015	.....	.....	.....
Fourth draft: Steel die to....	0.014	0.014	.....	.....	.....
Fifth draft: Steel die to....	0.0132	0.0135	0.0135	.....	.....
(Last draft: Diamond)....	0.0126	.....	.....	.....	.....
Sixth draft: Steel die.....	.....	0.0126	.....	.....	.....
(Last draft: Diamond)....	.....	0.0116	.....	.....	.....
Seventh draft: Steel die....	.....	.....	0.013	.....	.....
Seventh draft: Diamond....	.....	.....	0.0116	0.0116	0.0116
Eighth draft: Diamond....	.....	.....	0.0102	0.0102	0.0102
Ninth draft: Diamond.....	.....	.....	.....	0.0094	0.0094
Tenth draft: Diamond.....	.....	.....	.....	.....	0.0089

Production Daily of One Operator.

No.	25.	26-33.	34.	35.	36.
Pounds.....	500	330-380	330	320	300

When a diamond is used for drawing steel wire it may not wear sufficiently to make the die hole off size for about three days, but even on the first day the die becomes rough, and fine cracks or markings begin to show around the edges of the die hole, sometimes making it desirable to repolish the die, although it is not actually off size. One die maker claims that this is caused by expansion and contraction on account of the elasticity (which is very small in the diamond), and that if it were possible to put the diamond through some treatment to improve it for die making it could be used more successfully for drawing steel, and that if the elasticity was not there the die would crack only in one place and not all around the edge. This is only a theory. This effect of fine lines or markings on diamonds, and changing to a milky color, has been observed before by diamond experts, by examination through a powerful microscope, and is said to be caused by heating the diamond. The wire drawers claim that the heating of the diamond in wire drawing makes no difference in the life of the diamond, except that the die should not be run dry, but a cooling lubricant be kept running over it continually. It is important to place the die accurately and firmly in position in the die holder. Frequently the die will not draw good wire as it is first placed in position; it is necessary to turn the diamond until the position is found where it will draw best, and the die is then marked on the upper side to keep it in that position. Some wire drawers claim that the die should be turned about once in every half-hour.

The speed at which the wire is run through the die seems to make no difference in the life of the die. Whether run slow or fast, the same total length of wire is produced from one die, and a die lasts longer at slow speed only because it takes so much more time to draw the wire than at fast speed. The shape of the bearing and the amount of polishing (the finishing operation) makes a difference. If extra time, and this means extra cost, is used in polishing, the die will have a longer life. Unlike a steel die, a diamond die will not stop up. All steel dies, as now used, either stop up or cut out.

Steel wire, with the blocks used on continuous machines (8 inches diameter), can be speeded up to 150 revolutions per minute. The difficulty in running higher speed than this lies in the construction of the machine. Where a machine is made to run slowly while threading up the dies with a fresh coil of wire one difficulty is removed. But most machines are run at full speed when one of the coils of wire runs out. In threading up the dies with wire from a fresh coil the wire between each die is given one or two turns around a rotating drum. The pressure of this wire on the drum throws the wire off size, as the wire does not commence to be drawn until all the dies are threaded and the end of the wire is attached to the drawing block. In drawing wire with a dead pull in this way through five or six steel dies the steel will sometimes cut out. There is also an extra strain on the diamond when the machine is started up at full speed. A knot in a fine steel wire striking a diamond will break the wire and not injure

a diamond so much as a continued vibration, such as where the die is not tight in the holder, or the machine vibrates; this will do more to make the die wear off size or crack than a sudden jar.

On fine copper wire, with 6-inch blocks, the machine can be speeded up to 350 revolutions per minute, say for 0.003-inch wire. The limitation to the speed is here again in the construction of the machine. At faster speed the machine would require adjusting daily. At 350 revolutions the wire runs firm through some of the dies, but between others the wire is a little slack, and it is then vibrating at a high rate of motion, the machine not being adjusted to take up the slack perfectly at such very high speed.

Fine steel wire which is harsh or slightly brittle may break up in being drawn through diamonds, and yet can be successfully drawn in steel dies.

The amount of steel wire that can be drawn through a diamond die before it wears off size is as follows:

No.	32.	33-35.	0.005 to 0.003 in.	0.002 in. and smaller.
Pounds.	200	100 to 150	About 15 pounds.	Less than 1 pound.

Although the length of the wire is very great at the smallest sizes the amount in weight is small, and as the wire is sold by the pound, it will be seen that the manufacture becomes very expensive. The drafts must be made light. Three or four diamonds are required to draw from 0.005 to 0.003 inch, and the same number to draw from 0.003 to 0.002 inch; 0.0025 steel brush wire is made of low or medium carbon steels, but this is the limit where it becomes commercially unprofitable to draw the wire. On higher carbon, harder music steel, 0.017 inch was the largest and 0.012 inch the smallest size that could be drawn without breaking the diamond. To-day, however, by using a 2 or 2½ carat diamond, music wire can be drawn as small as 0.005 inch.

There is a good demand for the 0.0025-inch scratch brush wire. It is drawn in ten drafts through diamonds from 0.005 to 0.0025 inch. One finishing size die is dropped for every pound of wire made and moved back to use for the next size coarser, and the finishing die replaced by a new die.

To draw steel wire from 0.002 to 0.001 inch would require ten diamonds, which at present prices would cost \$40 to \$100, and the production would be so small that it might not exceed one ounce per day, as it would take a great length of wire for that weight.

Orders for music wire are seldom taken for sizes finer than 0.009 or 0.008 inch, as the wire at this very fine size becomes very curly, and no method has been discovered as yet of making or keeping it straight. The drafts from about 0.016 inch are all in diamonds, as follows:

Inch.	Inch.	Inch.	Inch.
0.0157	0.013	0.0106	0.0091
0.0148	0.0122	0.0098	0.0087
0.0138	0.0114		

### United States Coaling Station at Manila.

A coaling station is being built by the Government in the harbor of Manila, Sangley Point having been selected by the naval engineers as the most desirable location for large coaling pockets and coal handling machinery. Extensive wharves and fire proof buildings are being erected for this purpose. Two coal sheds are each 194 feet wide and 300 feet long, with an interval of 50 feet between them, while the wharf is 418 feet in length and 75 feet wide.

The coal handling machinery is designed to remove the coal from colliers by means of hoisting towers and distribute it in the storage sheds by automatic railways; also to coal the war vessels at the wharf from the shed. To do this to best advantage requires two steeple towers equipped with steam hoisting engines and duplex steam shovels, 12 automatic railways and over a mile of track. All this coal handling machinery, together with accessories such as railway equipment, cars, coal tubs, &c., is being built by the C. W. Hunt Company, New York.

### The Railway Steel Spring Company.

The Railway Steel Spring Company, with headquarters in Pittsburgh, have arranged to take over the Steel Tired Wheel Company. For this purpose the Railway Steel Spring Company will increase their capital stock from \$20,000,000 to \$27,000,000, and a circular has been issued to stockholders giving details as follows: "On May 6, 1902, the directors of your company entered into an agreement with the directors of the Steel Tired Wheel Company providing for the merger of the latter company into your company. This agreement is subject to the approval of the stockholders of both companies, and is to be submitted to you at a stockholders' meeting, to be held at the office of the company, 15 Exchange place, Jersey City, N. J., on Tuesday, June 3, 1902, at 12 o'clock, noon. The proposed agreement provides for the increase of the capital stock of the Railway Steel Spring Company from \$20,000,000 to \$27,000,000, the additional capital stock being divided into 35,000 shares of preferred stock and 35,000 shares of common stock. This additional stock is to be used to acquire all of the assets of the Steel Tired Wheel Company through the acquisition of all their outstanding stock. The Steel Tired Wheel Company are engaged in the manufacture and sale of steel tired wheels, and own, free of any encumbrance, plants fully equipped for their business at Hudson, N. Y.; Depew, N. Y.; Scranton, Pa.; Pullman, Ill.; Denver, Col.; Chicago, Ill., and Cleveland, Ohio. They have in addition quick assets consisting of cash, approved accounts and bills receivable, material and supplies, of the value, after deducting current bills, of \$1,390,071.83. The business of the Steel Tired Wheel Company has been, and is now, very profitable, their average net earnings per year for the years 1899, 1900 and 1901 amounting to \$462,514.90, and their net earnings for the first four months of 1902 amounting to \$221,925.16. The amount required to pay the dividend on the proposed new issue of preferred stock is \$245,000. The proposed merger agreement has had the careful consideration of your directors and is by them unanimously recommended for your approval."

Of the present capitalization \$10,000,000 consists of 7 per cent. cumulative preferred stock and \$10,000,000 common stock. The Railway Steel Spring Company own the following properties, which are said to represent about 95 per cent. (60,000 tons yearly) of the steel railway spring capacity of the country: A. French Spring Company and the Railway Spring Department of the Crucible Steel Company of America, Detroit Steel & Spring Company, Detroit, Mich.; National Spring Company, Oswego, N. Y., and the Pickering Spring Company, Limited, and the Charles Scott Spring Company, both of Philadelphia.

Officers and directors of the company are: Directors, Aaron French, chairman of the board; Samuel R. Callaway, Julius E. French, president; Frank S. Layng, Charles Scott, Jr., and George B. Sloan, Jr., all three vice-presidents; Charles H. Halcomb, Truman H. Newberry, Charles Scott, Frank B. Smith and S. L. Sconemaker. Executive Committee, Julius E. French, Truman H. Newberry and Frank B. Smith. Other officers are: Assistant treasurer, Frank Carnahan; secretary, M. B. Parker; general superintendent, De Witt Loomis; general counsel, Reed, Simpson, Thacher & Barnum.

**Geared Shears for Bars and Flats.**—Flats up to 6 x ½ inch and bars up to 1½ inches square can be cut on the new shears built by the Philadelphia Machine Tool Company of 445 North Darien street, Philadelphia. As the gears are placed on top the floor space occupied is only 32 x 48 inches. The shaft is made from an open hearth steel forging about 0.40 carbon and is forged solid without welds. The stroke is made to suit the requirements of the work, varying from 1 to 3¼ inches. The machine is usually fitted with an automatic positive clutch, by which it makes one stroke and automatically stops at the top of the stroke. With this clutch the machine can be run continuously by holding down the treadle by a catch. For some work only continuous running is desired and the clutch in this case is not fitted.



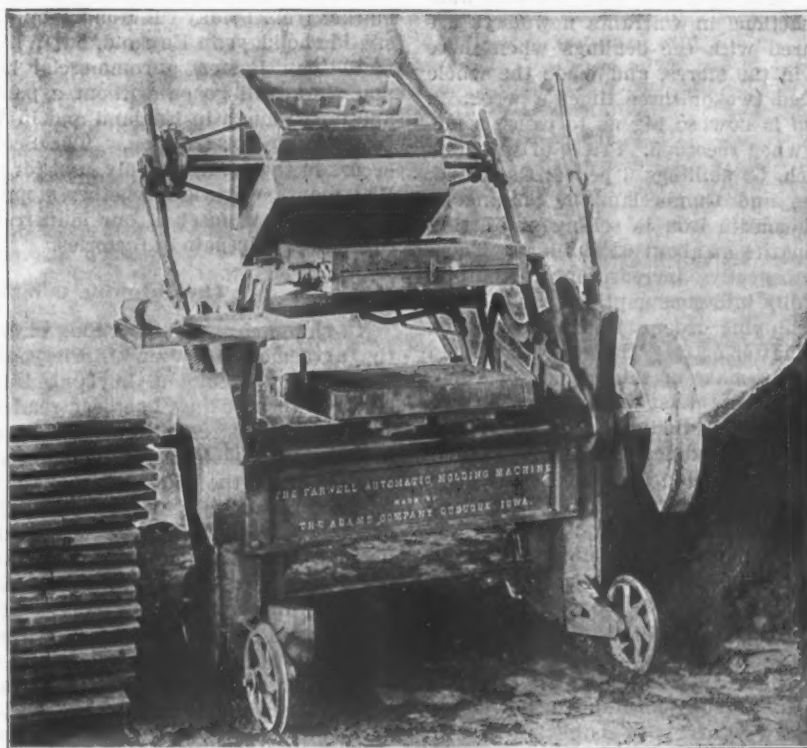
### The Farwell Automatic Molding Machine.

The Farwell automatic molding machine, built by the Adams Company of Dubuque, Iowa, is designed to make a complete snap mold. It is used with a solid iron tapering flask and match plates, or, as sometimes called, patterns on a plate. By a few rapid and easy motions the operator allows the pattern plate to slide between the cope and drag, and after filling the drag with sand and placing on the bottom board the flask is turned over, the cope is then filled with sand and the entire mold pressed at once.

The turret top is arranged to do any special peining, and can be made to cut sprues or draw flat gates automatically. The turret top is not necessary for all work, as peining can be done by making the presser board and bottom board of special design. The operation of this machine is simple, and an intelligent molder can understand it in a few hours. One of these machines is now in the ninth year of successful service in the foundry of the Adams Company. It has produced over 700,000 cast-

dell & Co. The union men in these shops declined to handle the Prentice Brothers Company's work and went out. The number of these strikers was so small as to indicate that the union has little strength in these shops. At the Draper shops 18 men went out, at the Whitcomb 17, at the Woodward & Powell 11. Thus it was shown that less than 20 per cent. of the employees are members of the union. The Blaisdell workmen will not get the Prentice Brothers' work until this week. Other machine shops will handle some of this work, so that it will be seen in many shops what the strength of the union is. The union has had a meeting and formally voted that its members shall handle no work from shops in which a strike is in progress.

The strikers have picketed all the shops whose men are out. Many machinists who were about to enter shop offices to apply for the vacant jobs have been turned back by the pickets. Yet the Metal Trades Association have not acted in the matter. Their idea is to avoid all trouble. The members of the machinists' union are being assessed \$1 a week each to support the strikers.



THE FARWELL AUTOMATIC MOLDING MACHINE.

ings, weighing about 8 pounds each, and from the outlook to-day the machine bids fair to continue its usefulness for many years.

### The Worcester Machinists' Strike.

WORCESTER, MASS., May 26, 1902.—The machinists' strike is still on and has spread somewhat, not, however, to the delight of the machinists' union, whose plans have been overturned by the action of the Metal Trades Association. As *The Iron Age* stated last week, the strike was aimed at the Prentice Brothers Company, the F. E. Reed Company and the H. C. Fish Machine Works. Three-quarters of the Prentice men went out, less than half of Reed's and a third of Fish's.

The Metal Trades Association voted unanimously to uphold one another in the strike. The Prentice Brothers Company had but one time order on hand. All other contracts contained a strike clause and the company stood to suffer no direct loss from them. But the time contract had to be filled and the other members of the Metal Trades Association offered to do the work in their shops. Parts of the unfinished machinery were taken by the Woodward & Powell Planer Company, the Whitcomb Mfg. Company, the Draper Machine Works and P. Blais-

As the list of strikers increases, owing to the action of the owners of other shops in insisting upon handling Prentice Bros.' work, the burden on the union men who are still at work is becoming greater, and it is likely that the assessment will be increased.

An attempt was made last week to provoke sympathetic action from the molders' and core makers' unions. It was urged that the members of these unions refuse to do work intended for the shops in which strikers are in progress. The National Association of Molders and Core Makers interfered, however, pointing out that when the molders struck several years ago they got no sympathy from the machinists.

The Metal Trades Association have opened headquarters in the Board of Trade Building, in charge of Charles E. Hildreth of P. Blaisdell & Co., secretary of the Metal Trades Association. They have advertised broadcast for machinists, offering permanent positions and good pay. It is expected that there will be ready response. However, the strikers will picket the Metal Trades' headquarters in the effort to prevent any number of outsiders from entering the employ of members of the association.

William E. Lodge of the Lodge & Shipley Company of Cincinnati, Ohio, was present at the meeting of the

Metal Trades Association last week and gave a talk on the Cincinnati machinists' strike, which had its beginning just a year to a day previous to the beginning of the Worcester strike.

J. N.

## The Scotch Markets and the Shipping Combine.

### The Pig Iron Situation.

GLASGOW, May 15, 1902.—The iron market here has been favorably affected alternately by peace prospects and by American reports. On the other hand, it has not been favorably affected by the shipping combine, and has not, as yet, received any benefit from the Admiralty contracts, work on which is only at the initial stage. Moreover, some delay has been occasioned with work in connection with these contracts by a change in the specifications of the armor to be used. The contracts for the armor, about 9000 tons, are now about to be placed. During the last week or two considerable business has been done in pig iron, and the warrant market has been quite lively in comparison with previous dullness. But the transactions in warrants nowadays are microscopical compared with the dealings when there were a million tons in the stores, and when the whole stock would be turned two or three times a week. A 10,000-ton transaction is now so big as to cause something of a sensation when recorded. Prices of warrants are as follows: Scotch, 53 shillings 6 pence; Cleveland, 48 shillings 8 pence, and Cumberland 60 shillings 3 pence. Middlesbro hematite iron is selling at 57 shillings and Scotch hematite at about 62 shillings. There is no increase or prospective increase in the output, which moves so steadily into consumption that it is not easy to fill a large shipping order without drawing on public stocks. As a matter of fact, the stores have had to be drawn on in order to make up the cargoes for America dispatched from the Tees. Last week some 3500 tons had to be taken out of the Middlesbro store for this purpose. There has been a good deal of buying of Cleveland warrants lately by a London firm supposed to represent American interests. Orders have been received in Glasgow within the last few days for several thousand tons of Scotch foundry iron, said to be about 10,000 tons in all, for shipment to the United States. For some weeks past iron has been going across from here by the liners and sailing vessels, a few hundred tons at a time, but now the shipments are about to become larger. The new steamer "Panama" has just sailed away from here with fully 4000 tons of Scotch pig iron on board. But this was largely to enable her to complete her trials, which had to be made loaded, before she was taken over by the owners, and a large portion of the iron is to be transhipped at Liverpool to various ports on your side. The Board of Trade returns showed a decrease, rather than an increase, in the exports of pig iron in April, but this month the figures will turn out much bigger, while in April the entire exports of iron and steel showed nearly 17 per cent. upon the corresponding month of 1901.

### Finished Products.

It is noteworthy that our steelmasters have been buying pig iron much more freely of late, both for present delivery and for delivery some months ahead. This looks as if they had or anticipated more business than is generally supposed. Yet prices are weak, and steel ship plates here are not salable at the official quotation, £5 15s., less 5 per cent. It is said that sales have been made as low as £5 5s. net, though for this I do not vouch. Scotch steel makers have for some weeks been receiving considerable orders for slabs, blooms and billets for shipment to the United States and Canada, and this week some orders for steel angles are reported from the United States. In Middlesbro steel ship plates are quoted £5 15s., less 2½ per cent., and steel angles £5 12s. 6d., less 2½ per cent., but there is not much activity there in steel except for rails, which are firm at £5 10s. net.

### Iron Ore and Coal Matters.

A favorable feeling has been produced in the iron and steel trades by a slight decline in Spanish ore, and

by the prospect of cheaper fuel as a consequence of the reduction of miners' wages in the area of the Miners' Federation of Great Britain. That reduction has not yet taken effect; indeed, in some of the districts miners are voting in favor of referring the demand of the employees to the neutral chairman, or arbiter, of the Conciliation Board, who is rather given to "splitting the difference" when he has to make an award. The general belief, however, is that the proposed reduction of 10 per cent. will take place and in that expectation many coal owners in England have already raised their prices. In Scotland the wage question is still in suspense, waiting the reconstruction of the Scottish Conciliation Board. But a scheme has at length been drawn up by a joint committee of masters and men, and is now being considered by the respective associations of coal owners and miners. The immediate effect of the new management will doubtless be a reduction in wages in Scotland also, for quite a number of the collieries cannot make ends meet at present rates, and the export outlook is bad. As it is, ironmasters have already obtained this month a reduction of 6 pence per ton in furnace coal, and they look for more. There will be no warrant market from Friday till Monday on account of the Whitsuntide holidays in England, but Whitsuntide is not (any more than Easter) a commercial holiday in Scotland, and work will go on without a pause at the factories and pits, though in England and in Wales there will be considerable interruption. The Scotch holiday season occurs in the month of July, and for about two weeks of that month work is altogether stopped, or very largely interrupted, in most of our industries. It is a time of overhaul and repair in factories.

### The Shipping Combine.

In shipping and shipbuilding circles here the text of the agreement between J. Pierpont Morgan and the White Star, Dominion, Leyland, International and Atlantic Transport lines has been read with much interest. The general impression derived is that while the White Star and Dominion lines have made a good bargain, Harland & Wolff, the shipbuilders, have made a still better bargain. There has been nothing like the commotion here about the shipping combine that there has been in London, for the simple reason that Glasgow shipping people at once saw its limitations as well as its possibilities. There is an overwhelming mass of tonnage outside the combination that no amount of Morgans can control. It is not the big passenger liners who do the bulk of the transcontinental traffic, nor do monster steamers that have to be laid up the most of the year represent the most profitable form of shipping property. But even as regards big passenger liners, there are far more outside than inside the combine, and here, on the Clyde, we have a dozen yards ready and able and eager to build any number of them. A combine of British shipbuilders, ship owners and railway companies could easily be formed, if need be, to stump the Morgan combine, who are by no means going to get it all their own way. But it is doubtful if there is any of our shipbuilders who would not be glad to have Harland & Wolff's share of the contract, the exclusive right of supplying and repairing ships, engines and boilers for the combine for ten years, absolutely without risk, as remuneration is by percentage on actual outlays. It is on this principle that the White Star boats and many other of our big liners have been built. Better results are obtained by confidential co-operation between builder and owner, and much saving is effected by giving the builder a free hand in carrying out an agreed plan. The contract with the Morgan company will debar Harland & Wolff from taking any more Admiralty contracts, as they have to devote all the capacity of their works to the needs of the combine so long as the latter can keep them employed. But they have not been in with the Admiralty list until lately, and the only Admiralty order they have on hand is for a set of engines for one of the new battle ships. They will not lose anything, therefore, by being placed out of the running for war ship work. It is to be noted that they reserve the right to continue building for their old customers, the Hamburg-American Company, who,



though not in the combine, are in the working agreement with it.

#### Outside Shipping Interests.

The Cunard Company will not join the combine, and are much more likely to form an offensive and defensive alliance with the other Glasgow owners and companies, the Allan, Anchor and Donaldson, and also with the other Liverpool-owned companies, whose operations and ramifications are quite unknown to the ordinary newspaper man. It is, perhaps, not generally known on your side that the Cunard Company have always been controlled from Glasgow, though for business purposes their head offices are in Liverpool. The late Sir George Burns, his son, and the late Lord Inverclyde and his grandson, the present Lord Inverclyde, have been the successive heads of the concern, all with their homes and offices here. It is just 63 years since Samuel Cunard came over from Halifax to Glasgow with an idea, which the late George Burns and the late Robert Napier, both of Glasgow, quickly materialized. Napier built the steamers, and Brown raised the capital, negotiated the mail contracts and organized the business on this side. Cunard arranged the agencies and organized the business on the other side. In 1840 the Cunard Company were formed with a capital of £270,000 to carry out Samuel Cunard's idea of "railway trains on the ocean." On the 4th of July of that year the first vessel of the company, the "Britannia," departed on her first voyage from Liverpool. Samuel Cunard went with her, and it is recorded that on his arrival at Boston he received within 24 hours no less than 1873 invitations to dinner. This record has never been broken, even by Beverdy Johnson, and it is not likely to be broken by Mr. Morgan in establishing a competitive enterprise. The keenest competition the Cunard line has yet had to encounter from the American side—that is to say, apart from British and German lines—was that of the Collins line, organized in New York about 1850. This was a big venture for the time, and it started with all the advantage of a substantial Government subsidy, whereas the Cunard Company had nothing but a moderate post office payment for mail matter carried. The Collins line was started with the object of sweeping the Cunard off the Atlantic. In eight years it was itself wiped out, and the Cunard line continued to bloom, though, as a limited company, it has never paid high dividends.

At a time when so much attention is being directed to Atlantic shipping it is interesting to note the beginning of the career of the latest addition to the Anchor line for the service between Glasgow and New York. This is the "Columbia," whose maiden voyage to your side will have begun before these lines reach you. The "Columbia" is the largest steamer yet built for the Anchor line, slightly larger than the well-known "City of Rome," but an altogether different looking ship. She measures 500 feet in length, 56 feet in molded breadth and 36 feet in depth, and is of 8400 tons gross. The "Columbia" is intended to leave Glasgow and New York respectively on Saturday, and to arrive at her destination on Monday morning. For the eight-day passage she has machinery to develop 18 knots. There are two sets of triple expansion engines with cylinders of 31½ inches, 51½ inches and 85 inches diameter, respectively, and a stroke of 4 feet 6 inches. There are six double ended and one single ended boilers of the best Siemens-Martin steel, with 39 patent withdrawable furnaces and a heating surface of 30,000 square feet. The "Columbia" has luxurious accommodations for 216 first-class and superior accommodations for 400 second-class and 750 third-class passengers.

The quantity of soot discharged into the air by soft coal used as fuel is very great. An English chemist took a sample of snow, which had been lying in the streets of Manchester for ten days, melted it and discovered that the residuum weighed at the rate of 3 tons per square mile. Forty-eight and six-tenths of this was pure carbon, six and nine-tenths heavy oil and grease, the remainder being ashes. Thirty tons of soot mixed with 2 tons of grease to make it stick well to buildings, distributed over city limits generally is an

appalling amount, and accounts for the dingy appearance of thoroughfares. Dr. Knecht of the London Technological School also experimented in the same direction upon snow that had been exposed nine days, and found three times as much soot, possibly because three times the amount of coal had been burned in the vicinity.

#### Proposed Amendments to the Mexican Patent Law.

Citizens of the United States who are inventors and who avail themselves of the protection afforded by the patent laws of foreign countries will be interested in a bill just introduced in the Congress of Mexico, whose object is to amend and modify the existing law governing the issuing of patents. The changes proposed are in the line of simplification both as regards the procedure to be followed in making application for a patent and the official formalities to be observed in the granting and legalizing of such patent. The bill referred to comprises some nine articles or clauses of an amendatory nature, the two principal ones, Articles 9 and 18, being as follows:

Article 9. The patent produces no effect against a third party who was already exploiting secretly or had made the necessary preparations to exploit in the republic the invention or improvement, before the filing of the patent application, but this right shall lapse when not adduced in litigation either by plaintiff or defendant within one year after the issuance of the patent.

Article 18. Inventors or improvers, whether citizens or foreigners, who cannot apply personally to the department of fomento, are entitled to appoint attorneys to act for them, both in soliciting the patent and in litigation and other questions concerned therewith. Such attorney may be appointed either by a simple authorization or a regular power-of-attorney duly protocolized. Powers from abroad for patent applications or for litigation and questions connected therewith do not need to be protocolized nor to undergo any formalities other than those provided by Articles 339 and 340 of the Code of Federal Procedure. The effects of a power-of-attorney terminate with the issuance of the patent saving an express clause to the contrary.

Article 19 provides for the publication of patent applications in the *Diario Oficial*. Article 23 amends the procedure in the event of opposition in these terms: "If an opposition is presented subject to the formalities provided by Articles 20 and 31, the Department of Fomento will call a meeting at which it will endeavor to reconcile the contending parties, but if it cannot succeed in this all further procedure will be suspended, and the records in the case will be sent to the competent judicial authority."

According to the provisions of Articles 27, 31, 35, 40 and 41, respectively, "patents will be issued in the name of the nation," and signed by the Minister of Fomento, a copy with the drawings, samples or models, &c., duly authenticated, constituting the life of the patent. Patents will be subjected to a fee of from 50 to 150 pesos, to be paid in revenue stamps. They will be null and void "when it is proved that the main object of the application is included under one or more of the contingencies provided by Section 2 of Article 21." The effect of a declaration of annulment or voidance is that the invention or process becomes public property. Patent ownership can be transferred by any of the means provided by legislation with respect to private property; "but no assignment or any other act involving a modification of the right of ownership can prejudice a third party unless registered in the Department of Fomento."

The New York Ship Building Company, Camden, N. J., launched on the 19th inst. the new steamer "Nebraskan," building for the American Hawaiian Steamship Company. This vessel is the second launched of three building for that company and will ply when completed between New York, San Francisco and the Hawaiian Islands. The "Nebraskan" is 371 feet long, 46 feet in breadth and 34 feet depth of hold, and is fitted with boilers whose furnaces are adapted to the use of oil, which will be used as fuel. When ready for service and classification the "Nebraskan" will have a capacity of 4500 tons register.

### The Standard Steel Car Company.

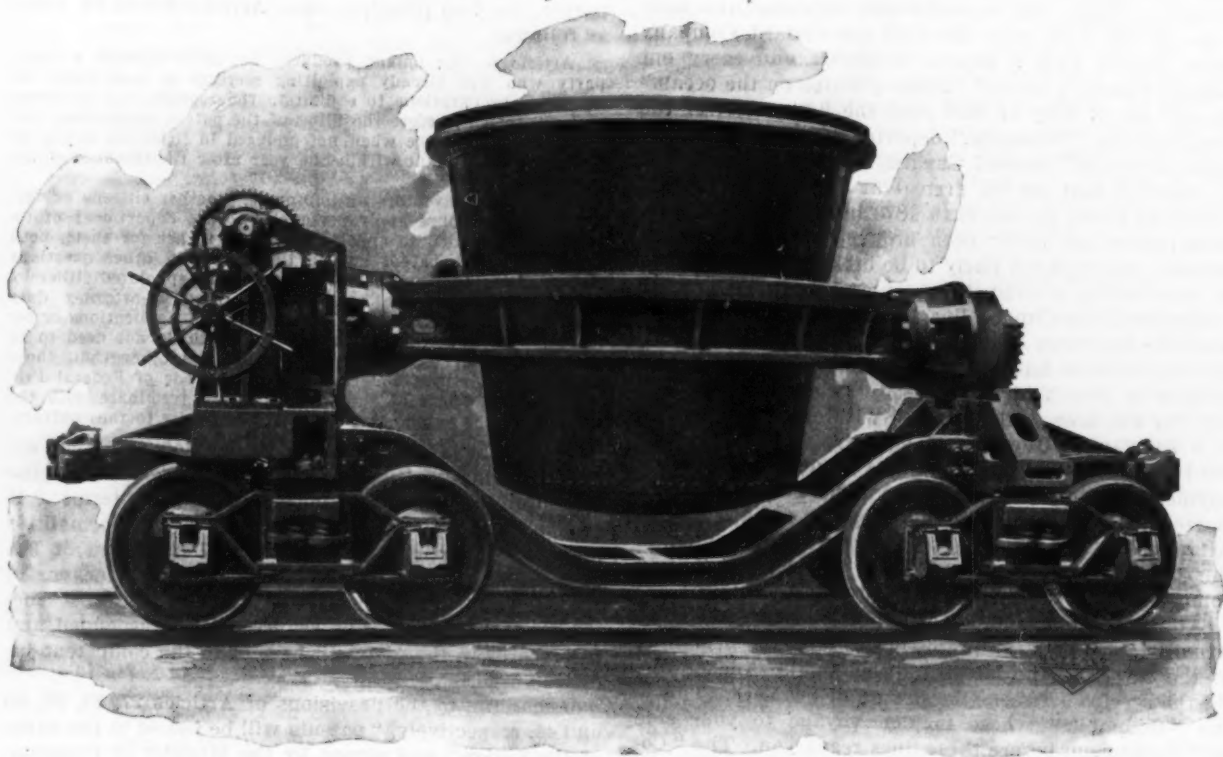
The first hearing in the case of the Pressed Steel Car Company against J. M. Hansen, for taking blue prints from the office of the Pressed Steel Car Company, came off at Pittsburgh last week. The testimony indicated that these prints had been made for Mr. Hansen, formerly chief engineer of the Pressed Steel Car Company, and now president of the newly organized Standard Steel Car Company, and he admitted that he received them. It appears, however, that some of the blue prints of the Pressed Steel Car Company were in possession of the Standard Company, and objection was made that the Standard Company should be brought in as a party to the suit, and the hearing was continued so that the bill might be amended to include the Standard Steel Car Company and cover all blue prints.

The stockholders of the Standard Company have increased the directorate of the company from five to seven members. The new additional members of the board are W. L. Mellon of T. Mellon & Sons, well-known

plant at Butler for the manufacture of steel car wheels, under patents owned by Mr. Schoen and others. It is proposed to make car wheels on entirely new lines, and much of the output of the plant will be used by the Standard Company in the building of steel cars.

### The Tread-Kill Cinder Car.

The cinder car herewith illustrated has been designed by M. H. Treadwell & Co. of 95-97 Liberty street, New York. The construction is such that the ladle may be turned on its trunnions by a train of gears. The ladle, when dumped, will pour the hot cinder out on either side of the track and away from it as far as possible. How this is accomplished will be understood from the drawings. At one end of the frame is a hand wheel, on the shaft of which is a pinion engaging a gear on an upper shaft. This latter shaft is formed with a worm meshing with a worm wheel carried by the trunnion. On each trunnion is a segmental gear operating in a



THE TREAD-KILL CINDER CAR.

bankers of Pittsburgh, and Henry Aiken, a prominent mechanical engineer of that city. The other five directors are John M. Hansen, president; A. R. Frazer and H. J. Gearhart, all of Pittsburgh; L. C. Weir of New York, president of the Adams Express Company, and Edwin Hawley of New York, president of the Iowa Central Railway Company.

The company now have about 1000 men at work at their new car plant, at Butler, Pa. The foundations for several of the main buildings have already been laid. The largest buildings will be of steel construction, and will be put up by the McClintic-Marshall Construction Company. The main erecting shop will be 240 feet wide and 1600 feet long. The dimensions of the wooden car department will be 160 x 400 feet. In addition there will be a power house, 50 x 750 feet, which will contain engine and boiler rooms, a machine shop and a blacksmith shop. This will be the only building that will have a steam line, the power for operating the machinery in the other structures being either electric, hydraulic or air. The plant will have switch connection with four railroads—the Pittsburgh & Western, the Erie, the West Penn and the Buffalo, Rochester & Pittsburgh. Already 3 miles of switch trackage have been laid. The output of the new plant will be from 50 to 60 steel cars per day.

It is also probable that Charles T. Schoen will build a

rack. When the hand wheel is turned the ladle is moved laterally, and at the same time is tilted to pour the load. By this means the cinder is delivered outside of the track.

The general construction of the car with the connecting underframe is such as to eliminate the great strains upon the ball which are apparent in other designs. In the building of the car the standard Master Car Builders' types of axles, wheels, brasses, car boxes, trucks, automatic couplers and cast steel truck bolsters are used, thereby permitting the substitution of any ordinary standard articles of this class. All parts are made interchangeable, and the ladle and lining are of standard size. The entire frame and bolsters are made of cast steel. The actual weight of the car is 60,000 pounds, and its capacity is 16 tons of cinder, or 200 cubic feet.

The United States Steel Corporation have under consideration plans involving the expenditure of large amounts for improvements in the Illinois Steel Company's works at and near Chicago, which will greatly increase their capacity. President Schwab and his party expected to devote some time on their recent trip to the inspection of the Chicago plants of the constituent companies of the United States Steel Corporation, but finding themselves compelled to return to New York



earlier than expected, they decided to postpone the Chicago visit and proceed immediately to Duluth to inspect their mining properties, going directly to New York on the completion of this work. It is probable that a special trip to Chicago will be made by them at some early day for the purpose of inspecting the works in that locality.

#### Drawback on Steel Plates.

The United States Treasury Department has rendered the following decision under date of May 17:

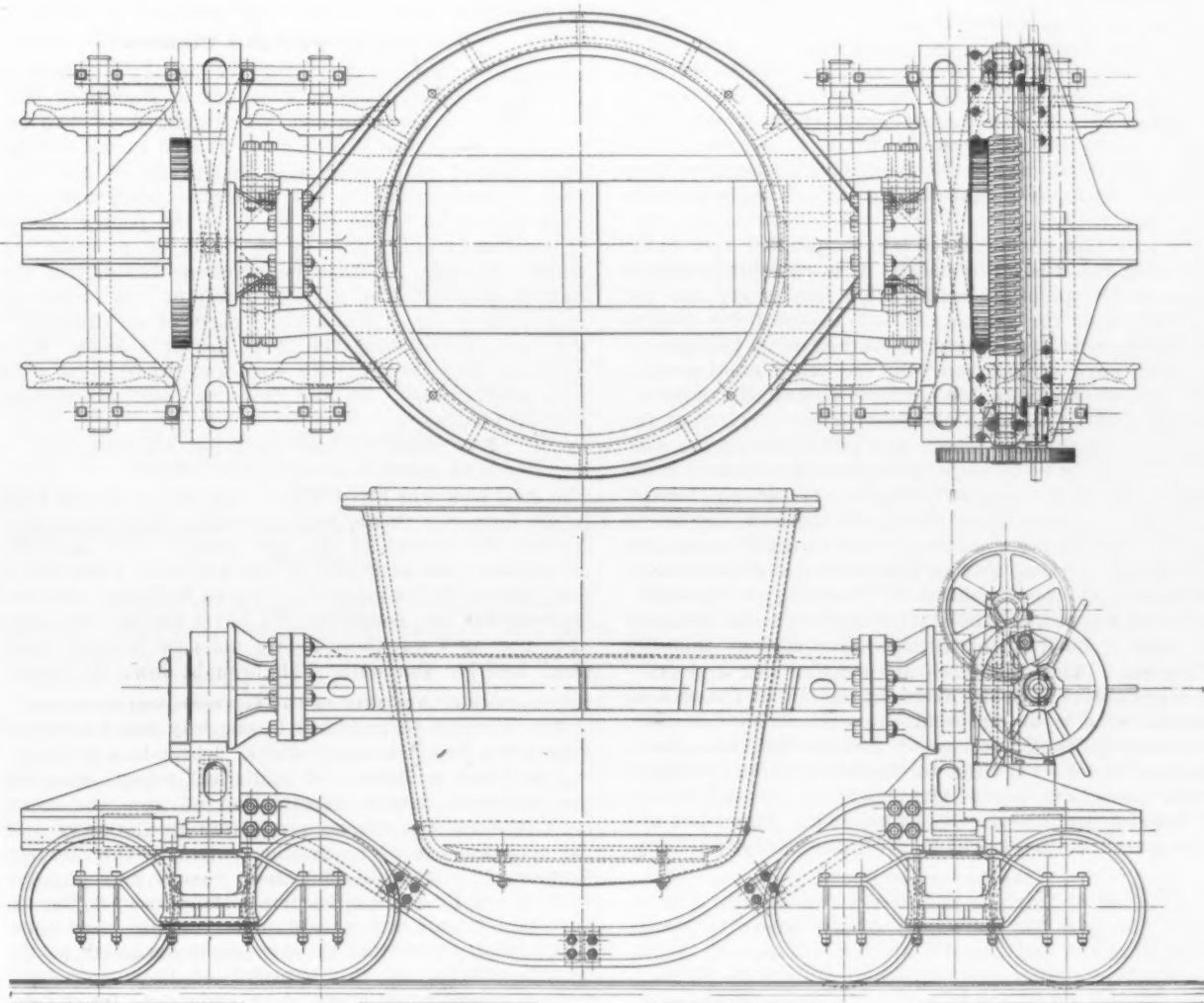
On the exportation of steel plates manufactured by the Central Iron & Steel Company of Harrisburg, Pa., wholly from imported steel slabs or billets, a drawback

but in no case shall it exceed 112 pounds for each 100 pounds of exported merchandise.

#### The Chicago Dry Grinder.

In the new grinder brought out by Hill, Clarke & Co. of Boston the column and head are cast solid in one piece, which insures rigidity. Another element of rigidity is a web cast with the column which connects the bearings on either side, curving out enough to clear the belt where it passes over the driving pulley. The bearings are dust proof and of such construction that oil cannot escape along the shaft.

Beneath the boxes is an oil receptacle cast in the column piece, and from it rises a wick which comes



Figs. 2 and 3.—Sectional Plan and Side Elevation.

#### THE TREAD-KILL CINDER CAR.

will be allowed equal in amount to the duties paid on the imported material so used, less the legal deduction of 1 per cent.

The drawback entry must show the quantity of material exported, and, furthermore, in addition to the usual averments, that the exported merchandise was manufactured of the material and in the manner set forth in the manufacturers' sworn statement as made from their records, which must be filed with the collector of customs at the port of exportation and officially verified prior to liquidation of the entries by comparison of the books and records of the manufacturers, which shall at all reasonable times be open to inspection of the customs officers. The quantity of the articles exported shall be ascertained by the exporting officer.

In the liquidation of the entries, the quantity of steel which may be taken as the basis for the allowance of drawback may equal the quantity declared in the drawback entry after official verification of exported weights,

through the babbitt at one end of the box, lies in a little trough cut for it in the bottom of the box and goes down again to the oil at the other end. This keeps the bearing continually oiled, and after once filling the oil receptacle the machine will run for three months without further attention. A pan with water pot is bolted to the column. The two usual rests for work are provided and are unusually strong.

**Baltimore Rolling Mill Company.**—The Baltimore Rolling Mill Company have been organized for the purpose of manufacturing bar iron at Baltimore. At the outstart the mill will consist of one 10-inch and one 18-inch train for finished iron, and there will be in addition thereto a complete puddling department. The president of the new company is Harry Wehr and the vice-president and treasurer Charles G. Phillips. The office of the new company is at 604 Continental Trust Building, Baltimore.

## Notes from Great Britain.

### The Future Iron Market.

LONDON, May 17, 1902.—Notwithstanding surface appearances to the contrary, there is a good deal of anxiety among ironmasters and others in this country as to the future of the iron and steel trade. It is felt that whatever present prosperity there may be it is in large measure due to the necessities of our competitors more than to the natural strength of our own market. The continued strong home demand in America, coupled with the cessation of German and Belgian market slaughtering, is for the moment all in our favor. The proposal of the United States Steel Corporation to spend \$30,000,000 on new plants and the enlargement of existing works is an event of which British manufacturers are not slow to appreciate the significance. It is computed that when these alterations have been completed a surplus is bound to enter either the British market or other markets where Great Britain is now selling in large quantities. The diversion of German and Belgian competition is, it is thought, due to precisely the same cause. Thus, if American iron and steel should harass the Belgians and Germans, they will doubtless once again try to market their products in this country.

A new factor has entered into the problem now in the shape of the Russian invasion. It is reasonably certain that the Belgians are selling at a loss to get into the market, and the outlook is not cheerful for British smelters, who are, indeed, perturbed with the present market price of pig iron. On the other hand makers of finished products are already feeling the squeeze, and will leave no stone unturned to buy pig iron at the very lowest possible price. The difficulties of the situation can only be in palpable degree alleviated by intelligent and well organized attempts to develop foreign markets in general, and the South African market in particular. That some attempt will be made to cut into the South African market ahead of the Americans is evidenced by the formation of a committee to inquire into and report upon the state of and openings for trade in Cape Colony, Natal, Orange River Colony and the Transvaal. The committee are sending out a deputation of experts to South Africa at the end of the present month. One is to represent the engineering interests, another textiles and soft goods, and the third the miscellaneous trades. Facilities for travelling through military lines throughout South Africa will be granted by the Colonial Office, and on the return of the deputation the information collected will be given the widest publicity.

### Machinery in Spain.

It is not so long ago that Great Britain held a practical monopoly for the supply of machinery in Spain. Both Germany and America are now competing. While the Spaniards still regard British machinery as the best, considerable trade has been lost by slow deliveries on the part of British manufacturers. In the Asturias, recently, tenders were called for to supply an 80-ton crane for the new harbor works at the port of Musel. Some British firms proposed delivery in nine months, one firm in 12 months, while a French house guaranteed delivery in six months, and obtained the order in consequence. It is evident that Spanish buyers are touched with the spirit of the newer world and cannot abide delay.

### Australian Tariff Bonus.

American manufacturers would do well to watch closely the discussions on the tariff in the Federal House of Representatives in Australia. It is evident that there is a distinct intention on the part of the Government, if possible, to develop home industries in the iron trade. The plan is to offer bonuses and to maintain a continued development of the Australian iron industry by ad valorem duties after the bonuses have ceased—that is, in five years after the date of their introduction. The bonus scheme includes the payment of £250,000 for the local production of iron and steel, the payment to be spread over five years. After the bonuses come to an end duties of 10 and 15 per cent. will be imposed for the protection of the new indus-

tries thus created. The free trade section, of course, fight the proposals bitterly. Capitalists are eagerly watching for the chance of finding an opening for the erection of blast furnaces and foundries. The assertion is repeated that vast deposits of iron ore exist. If the Commonwealth, with its growing population, its enormous territory, its increasing demand for both light and heavy metal products, can by Government stimulation produce the iron and steel wanted, it cannot fail to have a most serious influence upon British, German and American prospects. In many respects the Australian trade is the great standby for English exporters. However, even if the bonuses take effect it will be many years before Australia can do without British or American iron and steel, and doubtless by that time some other market will have approached the present stability which makes the Australian market so valuable.

### Andrew Carnegie as a Plumber.

Andrew Carnegie was last Wednesday admitted a freeman of the Worshipful Company of Plumbers. The ceremony, we are informed, was intended as "an expression of national sentiment in regard to the enlightened method and exceptional magnitude of Mr. Carnegie's benefactions in aid of higher education upon lines placing it within the reach of the poorer classes of the community, and by so doing to promote the widest influence of those benefactions throughout the British empire." The casket containing the certificate was in the form of a muniment chest of the Plumbers' Company, saved from the great fire of London. It is made of silver, bound with steel and ornamented with steel and enamel. On the front is inscribed George Herbert's couplet:

"Who shuts his hand hath lost his gold;  
Who opens it, hath it twice told."

The steel lock was fitted with a gold key, with the head in the form of a thistle, as the badge of Scotland, set in jewels. The speech of the new freeman was regarded as eloquent and inspiring by the audience, particularly that portion of it wherein he referred to future relations between the two countries. "I never see the two flags entwined as I see them before me now without emotion," said Mr. Carnegie. This brought down the house.

### Commercial Activity of the German Government.

The German Government in one way and another is very active in commercial affairs. I hear that it is having prepared a number of statistical reports showing the estimated yearly consumption of iron and other metallic ores, the annual production in Germany and the probable life of producing centers in the German Empire. It is thought that these reports may possibly be followed by some legislative restriction upon the export of German ores except under certain conditions. It is further stated that the German Government, on the recommendation of the Ministry of Commerce, will make a considerable grant at an early date for the development of German commerce in East Africa. Steps are to be taken to organize trade on the great lakes, for which a company already exists, but the boats engaged at present have little, if any, value compared with the British enterprise operating in these regions.

### Fuel Prices Breaking.

In South Staffordshire there has at length been a break in coal values; prices of fuel have now been reduced 1 shilling per ton. Ten per cent. reduction in wages in the coal district in which the miners are members of the Miners' Federation has been accepted, with the result that new prices are: Staffordshire forge coal, 7 to 9 shillings; furnace, 9 to 10 shillings; Cannock Chase, best deep, 10 to 18 shillings; best shallow, 12 to 14 shillings.

### More Pig Iron for America.

During the week further sales of Scotch foundry pig iron have been effected for export to America. For some time past steel makers in the west of Scotland have been in receipt of American contracts for raw material, such as slabs, blooms and billets. It is further stated that orders have now been received for angles. Last Tuesday the steamer "Panama" left Glasgow for Liverpool with a cargo of 4000 tons of special brands



of Scotch pig iron, part of which is for transshipment. This is believed to be the largest cargo of pig iron which ever left the Clyde.

#### The Report Nearly Ready.

It will be within the memory of your readers that last year a deputation were sent out by the British Iron Trade Association to the United States to investigate the conditions of the American industry, who promised to complete their report as speedily as circumstances would permit. I am now informed that the book is to be published in a week or two. It will deal in a more exhaustive manner than has previously been attempted with every phase of American industries, particularly the iron and steel trades, engineering and shipbuilding.

#### Swedish Ore and Modern Practice.

If in the future British ironmasters are to rely upon supplies of hematite ore from Sweden, they will undoubtedly have to depend much more upon basic processes, for there can be no doubt that the present supply of hematite ore is diminishing, and that whatever new raw materials are used, they will contain much phosphorus. Germany imports from Sweden annually 1,250,000 tons of iron ore, 700,000 tons from Lulea and 550,000 from Oxelosund. This latter ore contains 60 to 64 per cent. iron and from 1 to 1½ per cent. phosphorus. It has many times been tried in the United Kingdom, but hitherto without success. They are experimenting and working upon it in Middlesbrough, but without any definite result as yet. The Grangesburg ore, 550,000 to 600,000 tons annually, mostly for use in Germany, is shipped at Oxelosund. The port is seldom closed by ice, while in addition it is free from harbor dues of all kinds. At the railway which terminates there special through rates are enforced for both export and import traffic.

S. G. H.

#### Engine Builders' Association of the United States.

A meeting of the Engine Builders' Association of the United States, composed of manufacturers of high speed engines, was held in the Hotel Schenley, Pittsburgh, on Thursday and Friday, May 22 and 23. W. M. Taylor of the Chandler & Taylor Engine Company, Indianapolis, Ind., is president, and G. N. McBrier of the Ball Engine Company, Erie, Pa., is secretary. Following is a list of those in attendance: George E. Gaskell and Arthur L. Merriman, Ames Iron Works, Oswego, N. Y.; Thomas C. Wood, Ball & Wood Company, New York City; C. A. Gates, Russel Engine Company, Massillon, Ohio; W. M. Taylor, Chandler & Taylor Engine Company, Indianapolis, Ind.; H. A. Chuse, Chuse Engine Works, Mattoon, Ill.; Prof. John E. Sweet, Straight Line Engine Company, Syracuse, N. Y.; J. H. McGregor and A. K. Spotton, Goldie & McCulloch Company, Limited, Galt, Ontario, Canada; C. B. Little, Brownell & Co., Dayton, Ohio; W. Sembower, Orr & Sembower, Reading, Pa.; S. H. Payne, the Payne Company, Elmira, N. Y.; F. M. Rites, mechanical engineer, Ithaca, N. Y.; H. L. Ide, A. L. Ide & Sons, Springfield, Ill.; W. R. Fleming, Harrisburg Foundry & Machine Works, Harrisburg, Pa.; G. N. McBrier, Ball Engine Company, Erie, Pa.; F. A. Millard, Murray Iron Works Company, Burlington, Iowa; Wallis C. Kerr and E. H. Griffin, Westinghouse, Church, Kerr & Co., New York City; E. M. Tingley, Westinghouse Machine Company, Pittsburgh, Pa.; H. M. Longwell, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., and H. F. J. Porter, Bethlehem Steel Company, South Bethlehem, Pa.

At the Thursday morning session President W. M. Taylor delivered the opening address, in which he complimented the association on the work it has done and the steady increase in membership which has been secured. Most of the high speed engine manufacturers are now members of this organization.

H. F. J. Porter, New York representative of the Bethlehem Steel Company, read an exhaustive paper on "Engine Forgings." It was illustrated with slides, and was extremely interesting. The next paper read was by E. M. Tingley of the Westinghouse Machine Company,

Pittsburgh, and was entitled "Engine Requirements for the Parallel Operation of Alternators." A short discussion followed. The third paper presented was by John B. Berryman of Chicago, on "Piping Materials for Steam Plants." The fourth paper presented was by H. M. Longwell of the Westinghouse Electric & Mfg. Company, Pittsburgh, who discussed "The Requirements for the Paralleling of Alternators as Viewed by the Engine Builders."

On Thursday afternoon and Friday morning executive sessions were held, at which matters of special interest to the association were discussed. On Friday afternoon the delegates in a body visited the works of the Westinghouse Machine Company and the Westinghouse Electric & Mfg. Company, both at East Pittsburgh. The delegates were much impressed with the magnitude of the plant of these two concerns and their facilities for turning out heavy work. The meeting was brought to a close by a banquet at the Hotel Schenley on Friday evening, which was thoroughly enjoyed by those present.

#### Reimportation of Domestic Car Wheels.

WASHINGTON, D. C., May 27, 1902.—The Treasury Department has made an interesting ruling with regard to the reimportation into the United States of domestic car wheels or other parts of rolling stock which may be removed from cars abroad because of defects, &c. This ruling is set forth in the following letter of Acting Secretary Spaulding to the Collector of Customs at Buffalo:

The Department is in receipt of your letter of the 21st inst., transmitting and reporting upon the application of John Budge, manager of the Pullman Company at your port, for waiver of certificate of exportation required by the regulations of October 19, 1899, relating to the free entry of returned domestic products, under the provisions of paragraph 483 of the act of July 24, 1897, in the case of returned car wheels of domestic manufacture. It is represented that the cars of said company are in constant service between the United States and Canada, and that it is necessary from time to time to remove the wheels in Canada from under the coaches in consequence of defects which would render the rolling stock unsafe for travel, and that it is impracticable to produce the certificates of exportation required by the above regulations. Under the rulings of this Department and article 599 of the Customs Regulations of 1899, vehicles, whether of foreign or domestic origin, in constant railway traffic between the United States and adjacent foreign territory, are not considered importations and exportations within the meaning of the customs laws.

In view of the above, and in accordance with your recommendation, you are hereby authorized to allow free entry of wheels of domestic manufacture when reimported under the above circumstances, if satisfied of such domestic origin, without requiring certificates of exportation. These instructions may be applied in the case of 11 pairs of wheels and one wheel specified in your letter, and the bond given for production of an export certificate covering the same may be canceled.

W. L. C.

We are advised by the Pittsburgh Reduction Company that they will erect a new plant at Massena, N. Y. It has not been fully determined just what size the initial plant will be, but it will ultimately be of sufficient capacity to utilize 50,000 electrical horse-power. Plans are now being prepared. It is also intended to ultimately erect a building for turning out finished articles made of aluminum. The power for the plant is to be supplied by the St. Lawrence Power Company, who have just finished their mammoth hydraulic electric plant at Massena.

The Vulcan Shipbuilding Yards at Stettin, Germany, have recently inaugurated a pension fund. Every employee pays an initiation fee equal to one month's salary and an annual premium equal to 3 per cent. of his yearly salary. Five years' membership secures a right to a pension.

## Canadian News.

### Irruption of Settlers from the United States.

TORONTO, May 23, 1902.—Developments that are very gratifying to the manufacturers and merchants of Eastern Canada are going forward in the Northwest. A genuine boom appears to have set in. There has been quite an irruption of settlers from the United States. Over the quality even more than over the quantity of the immigration satisfaction is expressed. The Americans, it is considered, will be active and intelligent producers from the moment of their arrival. In fact, they will probably bring with them higher standards of progress than those generally holding in the part of Canada west of the lakes, for they come from a country very similar to the Canadian West, but having the advantages of longer settlement, denser population and more enterprise. It is felt that the newcomers will introduce better methods of farming, more diversity of production and various economies.

Heretofore the Canadian West has had, so to speak, to school its own pioneers. It got few of the people who had an experience of life in such a country—that is, it profited comparatively little by the lessons learned in the opening up of the Northwestern States. The settlers who went in from Ontario were of the right stuff, full of resourcefulness and very progressive. But the Europeans were slow to adapt themselves to the conditions. Headway is likely to be much more rapid now that trained homesteaders are trooping into the country from across the line. American capital is coming with American population. Several large land syndicates have purchased extensive tracts at prices much higher than could have been got a year ago. In this year's seeding the effect of the new immigration is seen. A far larger relative proportion of the land put under crop is given up this spring to coarse grains and to flax. Flax is one of the most remunerative crops grown on the lands of the American or the Canadian West. Coarse grains repay the farmer well in the live stock that is raised upon them. About the same acreage is put under wheat as was so sown last spring, but a very greatly increased area is given up to the other grains.

### Favorable Conditions for Trade Expansion.

Of the proceeds of last year's large crop a great part is yet unexpended, for the reason that the railway system being unequal to the task of carrying out the grain before the close of navigation last autumn, upward of 20,000,000 bushels of wheat remained to be moved this spring. On this the farmers have lately been realizing.

Altogether the conditions are most favorable for the expansion of trade this season, and manufacturers in Ontario and Quebec are largely increasing their output on account of the demand which is certain to be heard from in the Northwest. If there is another crop there this year equal to that taken off last the demand may easily exceed the capacity of the home supply of manufactured goods of the kind wanted, for the buying power of the country will not be so much repressed by inadequate railway service. Not only are the Canadian Pacific Railway Company making great increases in their rolling stock and power, but also the Canadian Northern is this year open for the first time from the head of the lakes into the interior of Manitoba, so that the demand of the farmers will be released more completely in the coming autumn than it was in the last.

Manufacturers in the older provinces will not be restrained from pushing business in the West and turning out goods in anticipation of a big trade there by any pessimism on the part of the banks. These will furnish funds for a large output. Two of the leading bankers—B. E. Walker, general manager of the Bank of Commerce, and D. R. Wilkie, vice-president of the Imperial Bank—have been expressing some very optimistic opinions about trade in the West. Harvest machinery, threshers, agricultural implements of all kinds, builders' hardware, the innumerable articles entering into a general hardware stock, manufacturing outfits, &c., will be in special demand. To minister most advantageously to that demand American manufacturers are now taking steps to establish branch works in this country, as the

Deerings of Chicago and a thresher manufacturing company in Minnesota. The latter have acquired the Toronto works of the John Abell Company. Negotiations for the establishing of works of the Deering Harvester Company in Hamilton have received a check, however, by the adverse vote of the property owners. It is possible another arrangement may be made with the company which will prove more acceptable to the taxpayers. Under the one proposed the city would have granted a bonus of \$50,000.

### Want Higher Duties on American Goods.

The following resolution was passed at a special meeting of the Montreal Board of Trade, a non-essential portion being omitted:

*Whereas*, In the international trade between Canada and other countries, more especially Germany and the United States of America, there have for years existed customs tariffs which operate against Canada's natural products and manufactures to an almost prohibitive extent; therefore,

*Resolved*, That the Dominion Government is hereby respectfully urged to make such alterations in the tariff upon our importations from foreign countries not having reciprocal relations with this country as will serve to protect the natural products and manufactures of Canada against the present discrimination under which they suffer, and thereby bring about in the near future fairer trade relations between Canada and said foreign countries.

### Steel Rails at the "Soo."

The plant of the Algoma Steel Company at Sault Ste. Marie began continuous operations on the 19th. It will be remembered that the works were started up on the 5th for trial purposes. The output of that day was notable as the first steel rails ever made in Canada. Since then and up to the 19th the works were shut down to allow repairs to be made to the intake pipe of the water system and other minor changes. On the morning of the 19th the converting mill again started and ingots were made. In the afternoon they were ready to be rolled into rails, when the rail mill was started. By July, it is said, the output of the rail mill will be as much as 1000 tons per day. The plant is arranged to turn out rails of 50 or 60 feet in length, weighing 85 pounds to the yard. The machinery is driven by electricity.

### Ontario Mines Output.

The following table, compiled by the Ontario Bureau of Mines, gives the output of metalliferous mines of the province for the first quarter of the current calendar year, as compared with the output for the first quarter of 1901:

Substance.	—First three months.—	
	1902.	1901.
<b>Nickel-copper:</b>		
Ore raised, tons.....	99,990	72,036
Ore smelted, tons.....	61,049	36,706
Nickel in matte product, tons.....	1,485	903
Copper in matte product, tons.....	1,290	840
Value of nickel.....	\$546,356	\$190,858
Value of copper.....	191,170	75,625
<b>Iron:</b>		
Ore raised, tons.....	5,207	36,503
Value .....	\$8,753	\$44,106
Ontario ores smelted, tons.....	21,991	21,083
Foreign ores smelted, tons.....	22,869	27,580
Mill clinder, &c., smelted, tons.....	5,149	3,486
Pig iron product, tons.....	28,459	28,694
Value pig iron product.....	\$397,838	\$438,659

The noteworthy features of this showing are the figures referring to iron ore and nickel matte. Only 5207 tons of iron ore are reported as raised, against 36,503 tons raised in the first quarter of 1901. This falling off is more apparent than real, the difference being attributed to the fact that navigation this spring had not opened in time for any considerable part of the Helen mine's output for the quarter to be included. As will be seen, the proportion of foreign ore smelted in Ontario furnaces continues to be the greater. In pig iron the production has been about stationary. Looking at the figures showing the comparative output and comparative value of nickel-copper matte for the two periods, there seems to be too great a discrepancy. But the extraordinary increase of value is due to the fact that the matte is now brought nearer to the refined state and is consequently of much higher value per ton.



**Minor Notes.**

The plant of the Royal Aluminum Company is to be enlarged for the manufacture of aluminum wire.

The period during which beet sugar machinery not made in Canada is to remain on the free list has been extended to April 1, 1903. In order to clear away a doubt as to the exact meaning of the language of the item which permits the free importation of machinery for making coke, the Finance Minister has had charcoal machinery specified in the same item.

On June 6 the rate payers of Welland, Ont., will vote on a by-law to exempt from taxation the steel works it is proposed to build there. Assurances have been received at Welland, it appears, that the ore required is available, that the capital is forthcoming and that work will be begun as soon as the town privileges are voted.

Fire did damage to the hardware store of Webber Bros., Hamilton, Ont., to the amount of \$25,000. The explosion of a tank of gasoline is thought to have been the cause.

Development work on Steep Rock iron range is being pushed by the syndicate from Ironton, Mich., who have secured the option to buy. It is said that the range has been traced 20 miles and that the ore so far mined is hard hematite. The property is beside the Canadian Northern Railway, a short distance east of Fort Frances.

Application has been made for a charter incorporating by letters patent the Cyclone Woven Wire Fence Company, Toronto, capital stock \$300,000.

Negotiations have been begun for the establishing in Hamilton of works by the Otis Elevator Company of New York to manufacture for the Canadian market. It is said that 200 hands would be employed.

Three hundred iron molders, core makers, helpers and apprentices employed in the Canadian Pacific Railway Company's foundry at Hoehelaga went out on strike some days ago. They demanded a minimum rate of wages of \$2.50 per day.

A. J. Moxham has resigned the office of vice-president of the Dominion Iron & Steel Company and has also retired from the directorate. Hon. L. J. Forget has taken his place on the board and James Ross has been elected vice-president.

J. Vantelet, assistant engineer of the Canadian Pacific Railway Company, has returned from a visit to New Jersey, where he was examining new railway shops in course of construction. The engineers of the Canadian Pacific Railway have been looking over all the great railway shops across the line, in quest of ideas for the new works the company are to build in Montreal. The plan for these shops calls for seventeen shops of the very best equipment.

C. A. C. J.

**Reading Railway Pension System.**

The Philadelphia & Reading Railway Company announce that they have inaugurated a pension system for their employees. The system will supplement the Philadelphia and Reading Relief Association. All employees not appointed by the Board of Directors to executive position, who have reached the age of 70 years, will be retired, and if they have been in the employ of the company for 30 years they will be pensioned. All employees over 65 years old, who have been in the service for 30 years, and who have become incapacitated, will be retired and pensioned. The monthly allowance will be upon the following basis:

For each year of service, 1 per cent. of the average regular monthly pay for ten years next preceding retirement. The pension board shall have power, in case a faithful employee of the company shall have received injuries which totally incapacitated him for his regular or other vocation, to take his case under consideration and award him such sum as a pension for such length of time as the board shall determine.

No person will be taken into the service of the company who is over 35 years of age, except with the approval of the Board of Directors. Former employees may be re-employed within a period of three years, and persons may, irrespective of age limit, be employed

where the service for which they are needed requires professional or other special qualifications. The pension system will eventually extend to all companies controlled by the Reading Railway.

**The Dominion Iron & Steel Company's Coal Supply.**

A joint meeting of the directors of the Dominion Coal Company and the directors of the Dominion Iron & Steel Company was held at Montreal on Friday. The following official statement of the business before the meeting was given out at the close by James Ross, managing director of both companies:

"On the 14th ult. meetings of the directors of the Dominion Coal Company and of the Dominion Iron & Steel Company were held, for the purpose of considering what action should be taken in regard to the option held by the steel company on the property of the coal company, which option expires this year. The important features of the matter were fully discussed at those meetings, and resolutions were passed appointing a committee of each company to meet a committee of the other for the purpose of preparing a draft lease to submit to the directors at a future meeting. These committees have met on several occasions, and they completed their labors yesterday. Meetings of the boards of the companies were held to-day for the purpose of receiving and considering the report and draft lease submitted by the joint committee, and after careful consideration and discussion the report and lease were adopted, and the lease was ordered to be executed by the respective companies. A resolution was also passed calling a meeting of the shareholders of the companies for June 12, 1902, to confirm the action of the directors at to-day's meetings.

"From another source it was learned that the document approved to-day follows closely the terms indicated by Mr. Ross in the statement which he made public after the meeting referred to on April 14. In one important particular, however, the steel company receive a concession which will save them a large sum annually, if the anticipations with regard to the output of the coal company are even partially realized. By the present contract the steel company have to pay to the coal company 15 cents a ton on all coal mined over 3,500,000 tons in any one year. By the new contract this royalty will be reduced to 7½ cents, which, of course, will effect a saving to the steel company of \$75,000 a year on every 1,000,000 tons over the 3,500,000 tons per annum referred to. The importance of this concession will be seen when it is said that the output for the present year will reach 3,500,000 tons, and that No. 2 mine will produce 8000 tons a day shortly, when the development is completed. It is therefore evident that the steel company before long will save from \$75,000 to \$150,000 a year. The position of the steel company will be further improved. They will not be required to make the cash deposit of \$600,000 called for under the present contract. Moreover, they will be relieved from paying to the coal company about \$2,000,000, which they were obliged to do by the original option, in order to discharge all the debts and obligations which the coal company had contracted. The new contract provides that the steel company shall pay all of the coal company's liabilities, but to enable them to do this they acquire all of the coal company's assets, which, when realized, will leave a large surplus. This surplus will be used to improve the coal company's properties."

C. A. C. J.

About 100 machine molders' helpers struck May 23 at the American Steel Foundry Company's plant, at Granite City, Ill., a suburb of St. Louis. On account of their refusal to work 100 other men were thrown out of employment. The men quit because the management would not reduce the amount of a day's work from nine frames, or castings, to eight. The strike is a comparatively small affair, as there are some 2300 men employed at this foundry, and none of them will leave their places on account of sympathy.

## The Proposed Reform in the Drawback Law.

### Unfriendly Attitude of Former Treasury Department Officials.

WASHINGTON, D. C., May 27, 1902.—Developments bordering on the sensational from an administrative standpoint have occurred within the past week with reference to the question now pending in Congress with regard to the advisability of liberalizing the drawback laws as provided by the Lovering bill. The principal feature in this connection has been the presentation to the Ways and Means Committee of an important supplemental statement prepared by Acting Deputy Naval Officer J. C. Sage, chief clerk of the drawback division of the Naval Office at New York, who has drawn upon an interesting series of unpublished official documents showing the attitude of the Treasury Department with reference to drawbacks for a number of years past, and disclosing the efforts made from time to time to secure the actual repeal of the drawback law on the ground that it furnished many opportunities for the perpetration of fraud upon the Government.

These documents, now for the first time published, Mr. Sage quotes as showing how, in spite of the strenuous efforts of the Treasury officials to repeal the drawback law because of the prejudice against it in the minds of a few subordinates, Congress, with greater wisdom, has continued the law on the statute books, and the late President McKinley, when chairman of the Ways and Means Committee, broadened its provisions to their present terms. Mr. Sage shows that the apprehensions of the Department concerning frauds have never been realized, and he quotes with much satisfaction the testimony of Col. Ira Ayer, given before the committee last week, in proof of the fact that the revenues are amply safeguarded and that the statute has been a noteworthy success.

Mr. Sage appends to his statement a letter from a former Secretary of the Treasury, the late Mr. Windom, which is very interesting reading in view of actual experience under the drawback law. The Secretary says that, in his judgment, "the drawback laws in their practical workings not only offer inducements to frauds which cannot well be guarded against, but are in many cases actually hurtful to domestic industries," and he adds that "holding these views I cannot recommend the extension of the system with promise of increased opportunity of fraud." This letter was written June 17, 1890, while the McKinley bill was under discussion in Congress; but Representative McKinley and Senator Aldrich promptly recognized the necessity of providing an offset for the relatively high protective duties of the pending bill and ignored the Secretary's recommendation. It is also an interesting fact that Secretary Windom urged Congress to increase the 1 per cent. retention provided by the drawback law to 5 per cent., "to pay the expense incurred by the Government in ascertaining the drawback." Experience has since shown that 1 per cent. is quite adequate to meet the cost of administering the drawback law; but, whether adequate or not, the contention is now put forward very vigorously that the principle of the drawback law is to provide free raw material for the export trade, and that the Treasury Department is no more justified in withholding 1 per cent. of the duties paid on such imported material than it would be in assessing an ad valorem duty of 1 per cent. on all goods now on the free list.

#### Colonel Ayer Makes an Additional Statement.

It will be remembered that Colonel Ayer submitted to the Ways and Means Committee last week a supplement to his statement, incorporating therein the draft of a substitute which he suggests for section 1 of the Lovering bill, which is the principal provision of that measure bearing upon the extension of the drawback principle. Owing to Colonel Ayer's long experience, and to the fact that he has conducted nearly all the investigations made by the Treasury Department as the basis for drawback regulations in the iron and steel trade,

he has been requested by the committee to explain in detail the operation of his substitute, and especially the conditions that would have to be met by the manufacturer and the requirements upon the special agent assigned to investigate the general practice of the plant turning out the goods to be exported with benefit of drawback. Colonel Ayer has therefore filed a statement in which he outlines methods of investigation to be adopted for the protection of the Government, in part as follows:

"In some cases this inquiry would be very simple. For example, under the present law domestic steel billets are assumed to have the same manufacturing value for a given purpose as imported steel billets, and hence in determining the wastage that would be incurred in the use of imported billets, used, for example, in the manufacture of steel rails, it has been deemed suitable to accept the wastage incurred in the use of domestic steel billets as shown by the records of manufacture covering a given period, say one year. For this reason it would be comparatively simple to ascertain the weight to be taken as the basis for allowance on all articles as manufactured wholly or in part of iron or steel, as, for example, locomotives, agricultural implements, &c.

"In other cases, however, it would seem that the subject would become very much involved without the application of the rule now being considered. For example, assuming that domestic wool has been used in the manufacture of carpets, the loss of which in scouring and the other processes of manufacture is 50 per cent., while the average corresponding loss incident to the use of the imported wools identified might be but 30 per cent. I think it will be manifest in this case that it would be unjust to grant, as a basis for allowance of drawback to be charged against the record, the weight of the domestic wool actually used.

"The foregoing will perhaps serve to illustrate as difficult a case as would be likely to arise under the proposed bill, and, of course, is merely given as an illustration. Many of the features could be provided for by general regulations, but it is believed that each case would also have to be treated under a definite regulation, to be prescribed after special investigations."

It is probable that within a few days the Treasury Department will be called upon by the Ways and Means Committee for a recommendation with regard to the Lovering bill, and much interest attaches to the question as to the attitude the officials will assume. At this stage of the session of Congress it is needless to say that the recommendations of the Department will have great weight, as it would be a very difficult undertaking to pass the Lovering bill within a few weeks should the Department manifest any determined opposition to its enactment.

W. L. C.

**Elimination of Impurities from Brass Scrap.**—The Ajax Metal Company, Philadelphia, Pa., advise us that they have, after considerable experimenting under the direction of G. H. Clamer, perfected a method for the elimination of zinc, iron, manganese, aluminum and other impurities from brass scrap, making the metal practically pure, and for which Mr. Clamer has been granted patents. They propose to erect a building, 100 x 175 feet, for the purpose of refining metal under these patents, and say that they will then be able to work ores direct from the mines, copper matte and galena. It is expected that the additional plant for which ground adjoining their present plant has been acquired will be erected and in operation by September next.

**Pope's Island Metal.**—The Waterbury Brass Company of Waterbury, Conn., advise us that they have secured the rights to manufacture the Pope's Island white and gold noncorrosive metal, and that after this date they will be the sole manufacturers. They have made a thorough investigation into the process and can assure the trade that the standard of excellence set by the Pope's Island Mfg. Corporation will be fully maintained. They also intend to make a specialty of this work, producing it upon a large scale in order to insure prompt deliveries.



# The Iron Age

New York, Thursday, May 29, 1902.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	-	PUBLISHERS.
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RICHARD R. WILLIAMS,	-	-	-	-	-	-	HARDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	-	BUSINESS MANAGER.

## Export Premiums in the German Iron Trade.

All the leading German syndicates interested in the coal and iron industry seem to have reached an understanding on the scheme of fostering the export trade by premiums. Among the organizations mentioned as concurring in the undertaking are the coal, coke, Rhenish Westphalian pig iron, Lorraine-Luxemburg pig iron, Siegen pig iron, steel billet, wire, beam and plate syndicates. The plan is to accord to those who have sold manufactured goods for export a drawback on their purchases of raw or partly manufactured material equal to the difference between the prices prevailing abroad and those ruling in Germany. These drawbacks are regulated by a central board from quarter to quarter on the basis of sales made during the preceding quarter, and apply only on deliveries made during the following quarter.

Figures have been adopted as the basis of consumption, which are interesting. Thus the consumption of coal is fixed at 150 kg. per ton of Bessemer ingots, 350 kg. per ton of open hearth ingots, 550 kg. on blooms and billets, 600 kg. on rails and fastenings, 500 kg. on wire rods rolled from purchased billets, 800 kg. on wire nails, 350 kg. on bars and light shapes and 700 kg. on plates.

The coke consumption is put down at 1100 kg. per ton of pig iron, 1300 kg. per ton of ingots, 1350 kg. on billets, rails and heavy shapes and 1400 kg. on bars.

The pig iron consumption is based on 1150 kg. per ton of ingots, 1200 kg. on billets and rails and 1250 kg. on bars. Similar figures have been determined for more highly finished forms.

The export drawback payments are therefore based on as close an approximation as possible to the actual consumption of material in the manufacture of the goods exported, the system illustrating well how the German syndicates co-operate in sustaining the national industry in times of stress.

The efforts of the German iron and steel makers to cut down imports and develop exports are shown by the quarterly returns just issued. For the first quarter of 1902 the imports of pig iron, old material and billets were 34,383 tons, as compared with 80,939 tons during the corresponding period of 1901. The exports of the same class of goods rose, however, from 74,381 tons during the first quarter of 1901 to 236,306 tons during the first three months of this year.

On finished goods, like rails and fastenings, plates, sheets, wire and bars, the exports rose from 283,531 to 386,172 tons, while the imports declined from 10,917 to 8923 tons. On other finished products, including castings, axles, tires, wire nails, pipe, forgings, &c., the export tonnage developed only from 99,929 to 107,905 tons. Altogether the exports for the first three months of 1901 were 523,522 tons, which increased to 785,779 tons this year. The imports of Germany of iron and steel declined from 124,223 tons in the first quarter of 1901 to 68,198 tons in the first three months of 1902. This is a showing which must be regarded as satisfactory, although it does reveal the distress to which the country

has been subjected. There can be little doubt but what the action of the syndicates in systematizing the export premiums and in extending them will yield further results, particularly since in many lines the iron makers of the United States have not alone completely withdrawn from the international markets, but have also become buyers of raw materials in Europe.

## The Anthracite Coal Miners' Strike.

The strike of the anthracite coal miners is operating to the advantage of producers of competing raw materials by enlarging their market. We see this in the very great activity reported from the coke districts, the production in the Connellsville region now exceeding all records. This enlarged demand will be of very great benefit to the mining and transportation interests of that region. It probably comes opportunely for the coke producers, who have been increasing their facilities to meet the prolonged heavy demand for their product, and, as usual under such circumstances, were likely to push their capacity beyond the requirements of their regular trade. Miners of bituminous coal are also benefited by the heavy demand coming from consumers along the Atlantic Coast, who have hitherto mainly or entirely depended on anthracite coal. The effect of this stimulated trade is seen in the advancing prices for soft coal.

The benefit derived by the soft coal and coke interests is, however, more than balanced by the unfavorable effects of the strike, which embrace the idleness in the first place of over 140,000 men directly engaged in mining anthracite coal, to whom in ordinary course over \$1,000,000 in wages would be paid every week. The loss of this purchasing capacity is no small matter to the country, even though it be confined to a single State. But the strike is not restricted in its wage reducing effects to those directly employed in mining. Thousands of men depend for their employment on the steadiness with which the anthracite mines turn out their product. They cover those who furnish supplies of all kinds to the anthracite mining sections, but more especially those connected with transportation interests. Other thousands have been thrown idle by the cessation of general business in mining towns. The number of unemployed will probably be increased very considerably as Eastern manufacturing establishments are thrown into idleness because of the lack of the necessary fuel.

The disadvantages and losses to general business are so much greater than the benefits derived from this strike that it will be to the interest of the country if it should be settled as speedily as possible. Notwithstanding the optimism of those who prophesied an early termination, it appears to be running along with no indication of collapse. The miners are apparently determined to make a test of endurance, and the managers of the mining companies are equally resolute. It is fortunate that sympathetic strikes are not easily inaugurated, for if they were the miners in the soft coal districts would be expected to assist their colleagues in the anthracite region and by the declaration of a general coal strike cause serious distress throughout the country. Labor leaders have shown a disposition in late years to widen the area of strikes, but thus far they have not succeeded in carrying through a movement of this character of any great magnitude. While the anthracite mining companies absolutely refuse to permit outside interests to exert any influence in settling this strike, it is earnestly to be hoped that some way may be speedily found for bringing the struggle to a termination. All business men will certainly

breathe much more freely when this menace to prosperity has been removed.

### The Changes in Circulation.

In the last 12 months there has been approximately an increase of \$70,000,000 in the total stock of money in the country, which includes the money in the Treasury as well as that in circulation and the specie and bullion in the Treasury, but not certificates held against these. The certificates are money in the hands of the public, but the certificates and the gold and silver notes they are issued against are not at the same time actual money. The increase consists of \$54,000,000 of gold, \$24,000,000 of silver dollars, \$4,000,000 of small change and \$7,375,000 of national bank notes. It must strike every one that this increase of less than 10 cents a head of population, and only about 2 per cent. of the national bank currency a year ago, is extremely small, and this fact is made the more important by the retirement of \$20,000,000 of "Sherman" notes during the year. The volume of greenbacks is fixed; the increase of national bank notes, therefore, filled but little more than one-third of the space left in the circulation by the retirement of the Sherman notes.

From May to November of last year the national bank circulation expanded less than \$9,000,000, and since November there has been a reduction of nearly \$1,500,000. Instead of decreasing from autumn to winter and then increasing in the spring, the national bank notes increased slowly till they slightly exceeded \$360,000,000 on February 1, and by May, when there was more occasion for money, the national bank circulation had fallen off nearly \$3,000,000. The effect of the legislation of March, 1900, has pretty much spent itself in the establishment of a considerable number of small banks, which have added only trifling amounts to the circulation, and in the increase of the circulation of existing banks from 90 per cent. to the par value of the bonds they deposited. Against the latter there was during the fall and winter a marked disposition to retire circulation and sell the bonds on account of the high price that could be got for them.

This is a very unsatisfactory condition of the currency for a large, rich and fast growing country. Money is accumulating and a good deal of it is going into the banking business, but it is largely going into trust companies and State banks, or if it goes into national banks only a minor part of it is put into Government bonds and circulation issued against it. Branch banking is an incidental matter. If the sections of the country that would benefit most from it are so blind to their own interests as to resist it, it might be dropped till the education of the public has proceeded further. The retirement of the greenbacks, even by slow installments, is said to be dangerous in politics on account of popular attachment to them as the means of carrying the Government through the Civil War. Probably timid politicians have made a great deal too much of this alleged sentimentalism, for the United States maintained itself by the use of Springfield rifles and smooth bore cannon; but there has never been a breath of opposition to displacing the weapons of 40 years ago by those of to-day, and it is absurd to suppose that there is any sentimental attachment to the greenbacks. But there are people who believe in fiat money, a trace of which lingers around these notes, and they will resist every measure to withdraw them at no matter how distant a day. It might be politically expedient to drop all proposals for the retirement of the greenbacks for the present.

But the bond secured currency is too small and too inelastic. The business of the country needs a larger volume of bank notes, and it needs a much larger volume in the autumn than in the winter. The only way of obtaining these things is to emancipate the circulation from the bonds and allow them to be issued against the banks' general assets, as a man issues his checks against his bank balances. After this were done and the bank currency had expanded, it might be easier to take up the question of the retirement of the legal tender notes.

### The Grain Crops of 1901.

On Friday last the Department of Agriculture issued the final estimate of acreage and yield of the principal grain crops of 1901. The statistician of the Department of Agriculture at last seems to have admitted the accuracy of the Census Bureau reports of the crops of 1899, as the revision made for 1901 crops is based upon the Census reports. The preliminary reports of the Department of Agriculture suggested a yield of wheat, winter and spring, for 1901 of 678,000,000 bushels. The present estimate is 748,460,218, on an acreage of 49,895,514, valued at \$467,350,156. The addition of 70,000,000 bushels to the crop is in harmony with commercial estimates. The trade statisticians have contended for years that the Department's figures have been too low, and the revision now made by the Government practically admits that the commercial estimates were well founded. During the week fine growing weather has been reported throughout the winter wheat belt and harvesting has already been begun in the Southwest.

The revision of the Government figures on corn adds 163,000,000 bushels to the preliminary estimate, the total crop of 1901 now being placed at 1,522,519,891 bushels upon an acreage of 91,349,928. The total value of the corn crop is placed at \$921,555,768.

The Government estimates the yield of oats for 1901 at 736,808,724 bushels, against a preliminary estimate of 661,000,000, an increase of 75,000,000 bushels. The area harvested for 1901 is placed at 28,541,476 acres and the total value of the crop is placed at \$293,658,777.

The official estimate of rye is: Area, 1,987,505 acres; yield, 30,344,830 bushels, and value, \$16,909,742.

Barley: Area, 4,295,744 acres; yield, 109,932,924 bushels; value, \$49,705,163.

Buckwheat, Area, 817,164 acres; yield, 15,125,941 bushels; value, \$8,523,318.

These estimates are important in that they will be the basis upon which future estimates will be made by the Government until the next census affords material for again squaring accounts.

### Pioneer Manufacturers of Large Chain.

Referring to the article published in our last issue descriptive of the 300-ton chain testing machine installed in the Lebanon Chain Works, at Lebanon, Pa., some interesting statements have been received from Bradlee & Co., Empire Chain Works, Philadelphia. They advise us that several inaccuracies appeared in the article. Bradlee & Co. claim that they were the first in this country to adopt the method of side welding for making large cables, and were actively engaged in their manufacture before the existence of the Lebanon Chain Works. Bradlee & Co. also have in their works two Olsen lever testing machines, similar in all essential respects to the machine described. The capacity of the older one, which has been in use since 1894, is 610,000 pounds, or 305 tons, and that of the new one, in use about a year, is 650,000 pounds, or 325 tons. Both of these machines are of greater capacity than the one in use in the Lebanon Chain Works. The firm also take exception to the last paragraph in the article, relative to



the severe tests to which the machine described has been subjected. They state that it is a physical impossibility to test 33 samples, or triplets, of such heavy cable in one and one-half hours. These corrections are made in justice to Bradlee & Co., whose chain works have been in existence for so many years turning out heavy chain.

## CORRESPONDENCE.

### The Labor Question.

*To the Editor:* The year 1902 is opening up with the epidemic of strikes and labor troubles that characterized the summer of 1901. Whether the grievances claimed by labor unions are of a sufficiently grave character to warrant the immense money loss entailed is a question of very grave importance, and a heavy responsibility rests on the labor leaders who plan and advocate them. If our daily papers and other publications would discuss both sides of the relations between labor and capital as freely as they do almost all other topics we think there could be much food for solid reflection furnished for both parties. But the failure to see a good solid editorial in any leading paper leads me to think that the press is afraid to take up the question thoroughly because of the danger of offending the labor organizations. We look at it differently. Why not point out both sides of the question?

At present the great cry of the unions is for eight hours' labor as a day's work with ten hours' pay. Is it not a question whether it is just? Suppose the operator or manufacturer were to post a notice that after a given date he would require ten hours' labor but would only pay for eight: what a commotion it would make in labor circles! But is there any great moral difference? Each would be trying to get something for which they were not willing to give value received. But suppose all had been accomplished that the labor unions desired: eight hours with ten hours' pay, making an increase or advance to the employer of 20 per cent. all along the line, on all the commodities, necessities and luxuries, that go to make up the workingman's and mechanic's home. Does it not stand to reason that in this as in all other cases the consumer pays for all advances—in cost of production? Now when it comes to the necessities of food, clothing, furniture, &c., who is the consumer? Is it not the workman and mechanic? Will they not have this added to the cost of living? What does he get in return? Two hours' idle time, which will bring in no income, and in too many cases will not be wisely spent. But in reviewing the matter do the labor leaders ever think of the hundreds of thousands of poor people who do not have any one to work even eight hours for them, and to whom any additional cost of living must mean considerable suffering and privation?

Take the present laborers' or miners' strike in the anthracite coal fields. As we understand it, part of the demands are for an eight-hour day and ten hours' pay. If the men get it, who will have to pay for the two hours' idle time? The consumer, of course, but on whom does this or would this burden fall most heavily? On the poor, who in large cities cannot now buy a ton of coal at a time, but buy by the scuttleful as they need it. Does it not raise a question if it is right or just that this burden should be put on the thousands and thousands who would have to pay for this idle time? Among them are thousands of men who belong to other labor organizations as well. As far as the miner himself is concerned he gets his coal at a very reasonable rate as compared to what those in the cities have to pay.

Another feature: Is the loss to others ever taken into consideration by those planning a strike—thousands of others in various branches—who must bear enforced idleness and loss on account of the same, but who are in no way responsible or directly concerned in the strike? Then again, as in the present miners' strike, we see by the public press the grave question raised as to whether the engineers and firemen should be called out. In one paper the remark is made that if the operators attempt to fill their places there will be serious trouble. Now it would sound rather harsh to head an article in the papers, "Shall We Flood the Mines or Not?" but what other

construction can be put on it now? When the strike is over, in many cases, it may be months before the mines can be pumped out. Are these matters well considered when men, especially the labor leaders, talk like this about laying plans to, as one might almost say, willfully endanger another's property? It makes one think that it would be no more than just to have a law to compel all labor organizations to incorporate under a charter so that they could sue and be sued and where they willfully impair and destroy another's property or business, simply because they could not agree with their employers, that they should be held responsible for any loss just as much as any other law breakers. Suppose, for instance, the operators were to publish a statement that they intended to destroy certain property belonging to the union. Either directly or indirectly would not action be taken at once to restrain or recover heavy damages?

The fact that a firm or corporation are willing to recognize a union seems to be looked on as if it were a crime by the organization. An individual who does not wish to join a union for any reason or wishes to obtain employment among union men is not looked upon as being a man fit to associate with. His presence even precipitates a strike. But do they ever calmly review this matter? Suppose the employer were to post a notice that all employees who did not conform to his religious or political views could no longer remain in his employ. Would he not have just as good a moral right to do so as the union? It is not the union or the fact that the men belong to a union that antagonizes the employer, but the too often arbitrary use made of its power by those who ought more frequently to consider whether they would wish to be governed by or even submit to the rules laid down by the union. If some of the labor organizations would establish some manufacturing business with their surplus funds or a small fraction of the wages lost in a strike, and then apply their own rules, they would soon have a much clearer idea of business. Much wiser councils would prevail.

We cannot help again saying that if our papers and the press would discuss these things calmly and without fear or favor both to the employer and the employee, they could do a vast amount of good by causing both to do more thinking. As it is our papers are more agitators than peacemakers in labor troubles. ISAAC BARTON.

WILLIAMSPORT, PA., May 21, 1902.

### Pipe Mill Records.

*To the Editor:* The 8-inch pipe mill of the Nicopol & Mariopol Mining & Metallurgical Company, at Mariopol, South Russia, made some days ago a new record in welding 8-inch lap welded steel pipes (28.3 English pounds per foot), the day turn welding 143 and the night turn 151 pipes, which makes a total output of 294 pipes per 24 hours, the coal consumed being for both bending and welding together 18 per cent.

This pipe mill, an old fashioned American mill, bought in 1896 from M. Tasker, Philadelphia, erected over here and started up by American engineers, enlarged and improved in every regard during the last two years by introducing all kinds of compressed air, hydraulic and electrical labor saving machinery, is supposed to hold the record for the whole European Continent.

We should be very glad to hear something about American pipe mill records regarding the output of lap welded steel pipes of the size and weight mentioned above. FRANK THIEL.

MARIOPOL, RUSSIA, April 22, 1902.

### The Determination of Silicon in Ferro-Silicon \*

BY G. L. NORRIS, BURNHAM, PA.

Owing to the difficulty of decomposing ferro-silicon by means of acids, the usual course of procedure has been to effect the decomposition by means of fusion with sodium carbonate. This necessitates the evaporation to dryness of a solution loaded with salts, and for accurate work a second evaporation to dryness of the filtrate is necessary. In the course of some work with ferric chloride I was led to believe that I could by the use of this

\* Journal of the Society of Chemical Industry, April 30, 1902, p. 537.

reagent determine the silicon in ferro-silicon accurately and rapidly. The method as adopted is as follows: 0.5 gram of powdered ferro-silicon is dissolved in a beaker in a solution of 10 grams of ferric chloride (U. S. P.) 50 c. cm. strong hydrochloric acid and about 0.5 gram of tartaric acid. The solution is rapid and requires little heat. When the solution is complete add 25 c. cm. of strong hydrochloric acid and boil for a few moments; remove from the lamp, dilute with cold water and filter, washing with hot dilute hydrochloric acid and hot water.

The silica is seldom stained with iron oxide and filters very easily, not being at all slimy. The time required for the analysis is about one-half hour.

The following analyses are typical results on the same sample:

By the fusion method, first evaporation, silicon.....	12.11
Second evaporation, silicon.....	0.52
	12.63
By the ferric chloride method, silicon.....	12.637

#### The Determination of Silicon in Ferro-Silicon.

*To the Editor:* In the issues of *The Iron Age* of March 22 and May 31, 1900, there appeared several articles on "Silicon in Ferro-Silicon," covering some results in silicon on a sample of ferro-silicon, a number of methods being employed by the chemists to whom the writer submitted samples, including his own determinations. These methods differed as to the solvent used, and it may be of interest to those who kindly assisted to learn of an additional method for arriving at the element of silicon in this special grade of iron.

G. L. Norris recently read a paper before the Society of Chemical Industry which introduced a method not heretofore employed on the sample in question. Ferric chloride, strong hydrochloric acid and tartaric acid constituted the solvents, and Mr. Norris' results were 16.33 and 16.30 per cent.

For the information of those readers who did not observe the previously reported results given in the articles referred to above, would say that the variation was from 14.90 to 16.68 per cent., or about 12 per cent.

FRED. W. BAUER.

CINCINNATI, OHIO, May 16, 1902.

#### Strike Injunction Decision at Chicago.

The Appellate Court of Illinois has affirmed in every particular the injunctive order granted by Judge Chetlain last January restraining John Beaton and other members of the International Association of Machinists from in any manner unlawfully interfering with the business of Robert Tarrant, machinery manufacturer at 52 Illinois street.

The decision was the outcome of litigation involving the strike at the plant of the Allis-Chalmers Company a year ago. Mr. Tarrant took contracts from that company, and on August 3 of last year the union machinists in his employ struck. Mr. Tarrant set up in his bill for an injunction many specific acts alleged to have been done by the striking machinists to the financial injury of his business. Numerous affidavits also were filed by men who asserted that they had been threatened and intimidated by the strikers. The Appellate Court adopts Judge Chetlain's conclusions of law in regard to the case, which in part are as follows:

"Workmen may use the streets and highways in a manner not inconsistent with public travel for the purpose of entreaty, inducement and peaceable persuasion in good faith, and a patrol picket may not necessarily imply force or a threat of bodily harm; but to accomplish their purpose they must not overstep the bounds and use threats, abusive epithets or intimidation, or congregate in such number or in such manner or with such a show of force as is calculated to intimidate a reasonable and prudent man, and no harm can result in granting an injunction to restrain such unlawful conduct."

Mayor Rose of Milwaukee, Wis., has found it necessary to make a decision relative to the technical meaning of the term "organized labor." This term is fre-

quently used in city contracts. The Mayor has decided that this term cannot be considered to mean organized bodies of men who are not recognized by the national or international unions. The particular case which called out this decision was one in which a contractor at a new school building, now in process of erection, employed men belonging to an independent union.

#### The St. Louis Machinists' Agreement.

ST. LOUIS, MO., May 24, 1902.—The St. Louis machinery market has been in an unsettled condition for about two months. The chief reason for this is that almost every manufacturer has had his shop crowded with orders, thus affording an opportune time for the various labor unions employed by them to come forward with demands for all kinds of unreasonable conditions. The machinists' demands were the most important. The local lodge of the International Association of Machinists have been working for a year under a verbal agreement with the St. Louis Metal Trades Association and consequently their demands were considered first. In order, however, that the conditions existing in St. Louis may be understood it is well to look back over the past year.

About one-year ago the St. Louis Metal Trades Association met the local machinists' union in conference, in order to settle, if possible, the difficulties that had arisen over the introduction of the proposed 54-hour week. The number of hours had been agreed to by both the National Metal Trades Association and the International Association of Machinists. The St. Louis Metal Trades Association at that time stated to the union that they were perfectly willing to keep their promise and give the workmen employed by them a 54-hour working week, provided the union would agree to all the terms of the New York agreement, then existing between the National Metal Trades Association and the International Association of Machinists. The manufacturers did this simply through the fact that they considered their promise as binding as any contract they had ever entered into, no matter what other firms might do. The local machinists' union agreed to this, and consequently all the terms of the now famous New York agreement have been in force in St. Louis ever since.

The St. Louis machinery manufacturers at that time supposed that all the other manufacturers over the country who had promised the same conditions would fulfill them. Later events show that these other manufacturers over the country did not do this, and St. Louis was the only large city in the United States in which the 54-hour working week was introduced by any association of machinery manufacturers or, in fact, that had retained the New York agreement. As a result St. Louis was practically the only large city where a strike in the machine trades did not take place during 1901.

This year the St. Louis lodge of the machinists' union came forward with a request for many changes in the existing conditions, and they asked for a conference with the St. Louis Metal Trades Association so that they could present their case. This was granted by the manufacturers and the first conference with the union was held May 8, 1902. The most important request, among innumerable ones, from the machinists' union was for a uniform increase in their present wage of 12½ per cent. and the continuance of the 54-hour week. The union based their claim for this increase on what they claimed as a fact that living expenses had increased materially in St. Louis over what they were a year ago. It was readily seen that these contentions would carry the negotiations far beyond the date (May 20) of the expiration of the existing agreement. In order to show their good faith and willingness to carry out the terms of last year's agreement both sides agreed to the following resolution:

*Resolved,* That until a new understanding is reached, or until it is decided that no agreement is possible, the present resolution of May 18, 1901, shall stand, and that if a new agreement is reached its provisions shall date from May 20, 1902.

After a series of ten conferences a mutual understanding was finally agreed to and the local lodge of the



machinists' union indorsed the following shop rules, which were to govern the members of the St. Louis Metal Trades Association in their relations with the machinists in their employ:

## No. 1.

A machinist is classified as a general workman, or a floor hand, or a lathe hand, or a vise hand, or a planer hand, or a shaper hand, or a milling machine hand, or a slotting machine hand, or a die sinker, or a boring mill hand, or a tool maker, or a linotype hand.

To be considered a machinist in either class, one shall be able to take any piece of work pertaining to his class, with the drawings or blue prints, and prosecute the work to a successful completion within a reasonable time. He shall also have served a regular apprenticeship or have worked at the trade four years.

It is understood that the question of competency is to be determined by the employers. Since the employers are responsible for the work turned out by their workmen they shall therefore have full discretion to designate the men they consider competent to perform the work and to determine the conditions under which it shall be prosecuted.

This last paragraph does not in any way abridge or destroy the right of appeal from any apparent or alleged unjust decision rendered by an employer, in conformity with the powers vested in him by this paragraph.

## No. 2.

Fifty-four hours shall constitute a week's work. These hours shall be worked between seven a.m. and six p.m., and a schedule thereof posted in the shops. All work outside of such schedule is to be paid for as overtime.

Night gangs shall also work fifty-four hours per week on the regular night schedule posted in the shop, and any overtime worked outside of the schedule hours shall be paid for as overtime.

(NOTE.—This rule is in no way to interfere with shops running under agreements providing a different schedule of hours.)

## No. 3.

All overtime up to twelve o'clock, midnight, shall be paid for at the rate of time and one-half time, and that after twelve o'clock and the following holidays: New Year's Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas and Sundays, shall be paid for at the rate of not less than double time.

In cases of emergencies, where shop machinery breaks or runs down, and it is absolutely necessary to repair the same so that the factory can run the following day, or on Monday, this work shall be paid for at the rate of time and one-half time. The repairs above referred to apply only to the machinery of the employer. The foregoing rates not to interfere in any way with existing conditions; that is, where a different rate than the above is paid now, no change will take place. Such rates for overtime shall not apply to men regularly employed on night gangs.

## No. 4.

Apprentices shall be formally indentured for a period of four years to learn the machinist's trade, and at the time of making said indenture shall be between the ages of 16 and 21 years. There may be one apprentice for the shop, and in addition not more than one apprentice for every five machinists.

No apprentice shall, except for just cause, leave the service of his employer until he has served his full term, when he shall receive an apprenticeship certificate.

## No. 5.

There shall be a fair day's wage, and no limitation of production.

## No. 6.

We disclaim any wish to interfere with the proper functions of labor organizations, but will permit no interference with the proper management of our business.

## No. 7.

Workmen shall belong or not belong to trades unions as they see fit. We shall employ union or free men at our discretion.

## No. 8.

Any workman may leave our employment whenever he sees fit, and it is the privilege of the employer to discharge any workman when he sees fit. But this rule shall in no case permit collective action, contrary to the provisions of Rule 9.

## No. 9.

We will receive committees of our employees to discuss grievances, and will not discriminate against any employee on such committee.

In case of misunderstanding we will meet our employees, either individually or collectively, and endeavor to adjust the matter on a fair and equitable basis, and in case of inability to reach a satisfactory conclusion we will submit the question to arbitration of six persons, three chosen by the employees and three by the employer, who shall, as soon as possible, attempt to adjust the matter, and in case of inability to reach a satisfactory conclusion this board may agree upon a final board of arbitration, whose decision shall be final and binding on both employer and employee.

Disapproving absolutely of strikes or lockouts, there shall be no cessation of work pending arbitration, and we will not arbitrate any question with men on strike.

## No. 10.

There shall be an increase of 2½ per cent. in the hourly rates paid machinists.

## No. 11.

These rules shall govern for one year from date hereof, and thereafter until amended or canceled.

In bringing about the above understanding the St. Louis Metal Trades Association were represented in the numerous conferences with the union by the Executive Board, consisting of the following: President, F. Schwedtmann, Wagner Electric Mfg. Company; first vice-president, Geo. W. Fisher, Fulton Iron Works; second vice-president, Geo. Kingsland, Central Union Brass Company; secretary, Wm. Medart; Medart Patent Pulley Company; treasurer, Geo. F. Steedman, Curtis & Co. Mfg. Company.

The firms in whose shops the above conditions will prevail during the current year are the following, all members of the St. Louis Metal Trades Association:

Wagner Electric Mfg. Company.  
Fulton Iron Works.  
Central Union Brass Company.  
Medart Patent Pulley Company.  
Curtis & Co. Mfg. Company.  
St. Louis Iron & Mach. Company.  
Quick Meal Stove Company.  
Kupferle Bros. Mfg. Company.  
M. F. Williams & Co.  
Kraushaar Lamp & R. Company.  
Hall & Brown W. W. M. Company.  
Yerkes & Finan W. W. M. Company.  
Standard Railway Equipment Company.  
N. O. Nelson Mfg. Company.  
Dehner-Wuerpel Mill Building Company.  
Seibel-Suessdorf C. & I. Mfg. Company.  
Fernholtz Brick Mach. Company.  
Schoellhorn-Albrecht Mach. Company.  
Wm. Ellison & Sons Mfg. Company.  
A. Leschen & Sons Rope Company.  
Barry-Wehmiller Mach. Company.  
Remmers Pattern Company.  
Geo. J. Fritz F. & M. Company.  
Arthur Fritsch F. & M. Company.  
John Ramming Mach. Company.  
Whitman Agricultural Company.  
Easmueller Mill Furnishing Company.  
Moon Elevator Company.  
Leighton & Howard Iron Works.  
Chas. Sinning Mach. Company.  
Wm. Grundler Mach. Company.  
Fred. J. Swaine Mach. Company.  
Belleville Pump & Slein Works.  
John Kiburz Pattern Company.  
Fisher & Davis Machine Company.  
F. H. Meslage Pattern Company.  
Wm. Benson Pattern Company.  
O. Gaisler, Jr., Pattern Company.  
John C. Kupferle.  
Reliance Machine & Tool Works.  
St. Louis Motor Carriage Company.  
St. Louis Steam Engine Company.

## The Chapman &amp; Bangs Company, Incorporated.—

William W. Chapman and Walter M. Bangs, for many years connected with the well-known house of the Congdon & Carpenter Company, announce that they have bought the stock, fixtures, accounts and good will of the Bridgeport store of the company. This business will be continued under the firm name of the Chapman & Bangs Company, Incorporated, 606 and 608 Water street, Bridgeport, Conn. They expect to carry a full line of iron and steel, sheet iron, tin plates and metals, carriage builders' and blacksmith supplies. William W. Chapman, who is the president of the new company, was connected with the Congdon & Carpenter Company for 22 years. Walter M. Bangs, the secretary and treasurer, was with the firm for 15 years, and is a brother of the late Henry C. Bangs.

## The Union Grinder.—E. A. Bienenstok &amp; Co. of St.

Louis are introducing a new line of grinders swinging 10, 12, 14 and 16 inches on the column and 8, 10, 12 and 14 inches on the bench. The rests can be quickly adjusted to any required position. The boxes are unusually long and heavy, and as they overlap the collars and pulleys the bearings are dust proof. The shafts are of high grade steel and can be taken out of the boxes without removing the collars.

The J. A. Roebling's Sons Company of Trenton, N. J., manufacturers of wire and wire rope, have voluntarily granted an advance to their workmen. While it is not uniform it amounts substantially to 10 per cent.

### The International Power Company.

The result has been made public of the examination into the affairs of the International Power Company by a firm of certified public accountants. The published report shows a general balance sheet as of April 30, and the income and profit and loss accounts. The general balance sheet shows:

Assets.	
Property and plant—	
Providence plant: Real estate, buildings, machinery and equipment, patterns and drawings.	\$1,739,137.72
Worcester plant: Real estate, buildings, machinery and equipment.	118,714.01
Office furniture and fixtures.	896.75
Total .....	\$1,858,748.48
Patents, good will, &c.:	
Corliss Steam Engine Company.	\$2,030,330.00
American Wheelock Engine Company.	596,710.80
Amoskeag Fire Engine business.	150,000.00
Development .....	89,200.71
Total .....	\$2,866,241.51
Less certain of the shares of company's common capital stock issued for the properties and plants acquired which were subsequently returned to the treasury of the company as a donation, and other extraordinary receipts.	1,597,296.59
Balance .....	\$1,268,944.92
Investments—	
American Locomotive Company stock: Preferred, 32,113 shares at 92½%.	\$2,970,452.50
Common, 6613 shares at 31¼%.	205,829.63
American Diesel Engine Company stock.	\$3,176,282.13
Total .....	\$3,251,706.94
Materials and supplies on hand, at cost, including finished stock and work in progress.	288,724.58
Current assets—	
Cash on hand and in bank.	92,578.17
Bills receivable (\$65,137.71 paid May 1, 1902).	79,188.51
Accounts receivable.	189,553.01
Telephone coupons and revenue stamps.	65.65
Total .....	\$361,385.94
Total assets.	\$7,029,510.26
Liabilities.	
Capital stock—	
Preferred, 6000 shares.	\$600,000.00
Common, 64,000 shares.	\$6,400,000.00
Less: in company's treasury, 13,530 shares.	1,353,000.00
First mortgage 4 per cent. bonds, dated February 1, 1899, due 20 years.	5,047,000.00
Current liabilities—	
Bills payable.	\$722,148.54
Accounts payable.	37,898.53
Dividends payable.	180,849.07
Interest, taxes and insurance accrued but not due.	4,236.34
Profit and loss (result of operations from organization of company to April 30, 1902)—	
Gross manufacturing profits.	\$707,375.46
Less selling and general expenses.	323,473.41
Net earnings.	\$383,902.05
Other income (including dividends accrued on American Locomotive Company's stock owned from June 1, 1901, to April 30, 1902).	219,816.14
Total income.	\$603,718.19
Deductions from income (including interest on bonds and miscellaneous interest).	134,817.72
Net income.	\$468,900.47
Dividends declared (including dividends payable May 20, 1902).	231,522.69
Total liabilities.	\$7,029,510.26

In explanation of the valuation of the assets the report says that all valuations were made on the lowest reasonable basis. No explanation is offered as to how \$1,597,296.59 shares of the company, which had been issued for plants acquired, were returned into the treasury as a "donation."

The income and profit and loss accounts show:

The gross manufacturing profits of the Corliss steam engine plant for the year ended December 31, 1901, were as follows:	
Gross sales.	\$513,759.68
Less discounts, allowances, rebates and prepaid freight charges.	6,293.50
Net sales.	\$507,466.18
Deduct decrease in inventory.	29,612.46
Total credit.	\$477,853.72
Manufacturing expenses.	373,313.83
The selling and general expenses, eliminating those applying to the Rhode Island Locomotive Works, were.	54,534.43
Net earnings.	\$50,005.46

Other income under present ownership and agreements—	
Dividends on American Locomotive Company preferred stock owned, 32,113 shares, at \$7 per share.	\$224,791.00
Royalties, International Fire Engine Company.	18,000.00
Total income.	\$292,796.46
Deductions from income under present obligations—	
Interest on bonds, \$200,000, at 4 per cent.	\$8,000.00
Miscellaneous interest:	
\$322,188.54, at 6 per cent.	\$19,328.91
\$400,000, at 5 per cent.	20,000.00
Surplus.	\$245,467.55
Dividend on preferred stock.	36,000.00
Balance, which is equal to dividends on the 6000 shares of the preferred stock and 50,470 shares common stock outstanding at \$3.71 per share.	\$209,467.55

### The Colonial Steel Company.

The Colonial Steel Company of Pittsburgh have secured for their New England branch warehouse the large store located at 84 High street, Boston, where they will carry a full line of annealed and unannealed Colonial special steel, also a large stock of Red Star tool steel, Red Star crucible spring steel and all the other grades of crucible steel, and, in addition, the better grades of open hearth machinery steel. This store is particularly well adapted for their purposes and will place them in a position to serve their customers in a most satisfactory manner. They expect at an early date to have it fully fitted up and their stock in place. The store is conveniently located, being within three minutes' walk of the Southern terminal station and elevated roads, and within one block of electric lines running to all of the depots in Boston.

They report work progressing very rapidly on their new steel plant, which is located at Colonia Station, near Pittsburgh. The buildings are all erected and will be sheeted and finished within a few days. The puddling mill, melting house and hammer shop are already in full operation, and the steel being turned out is stated to be of very fine quality, showing up remarkably well in every test to which it has been subjected. Orders are coming in so freely that they have commenced the erection of four more crucible furnaces. The work on these will be pushed as rapidly as possible and when completed they will give a considerable increase to the output of steel.

In the rolling mill department the 12-inch mill has been started, and they expect to have the 9-inch and sheet mills in operation in about two weeks.

All their other mills, with the necessary engines, have been placed on their foundations and lined up, and will be ready to start the last week in June, or as soon as the heating furnaces are built.

**New Nipple Holder.**—The Armstrong Mfg. Company of Bridgeport, Conn., have designed a new nipple holder to be used in connection with their No. 00 pipe threading machine. It holds pipe from 1 to 4 inches inclusive by using different threaded rings and backing pieces. It will also hold close nipples, either right hand or left hand, no change of parts being necessary to hold the nipple for threading it left hand. When the thread is cut the nipple can be removed with the fingers by loosening a screw in the back of the holder. This holder can be furnished to hold as small as ¼ inch.

The stockholders of the Niagara Falls Power Company will hold a special meeting in the offices of the company, at Niagara Falls, on Tuesday, June 3, at which time they will vote on a proposition to increase the capital stock of the company from \$6,500,000, consisting of 65,000 shares, at the par value of \$100 each, to \$9,500,000, to consist of 95,000 shares of the par value of \$100 each. Following the special meeting the annual meeting will be held, at which time 13 directors will be elected for the ensuing year. On the same day at the same hour the stockholders of the Niagara Junction



Railway and the Niagara Development Company, allied to the Niagara Falls Power Company, will hold their annual meetings.

### The General Electric Company Absorbing the Sprague.

The absorption of the Sprague Electric Company by the General Electric Company is practically assured, as it is understood that a sufficient number of the security holders of the former company have agreed to accept the offer of the latter, as outlined in a circular sent last week to the bond and stockholders of the Sprague Company by their president, John Markle.

The terms of the plan by which the electric merger is to be effected are by an exchange of securities and some cash. The three classes of securities of the Sprague Electric Company, 5 per cent. bonds, preferred and common stock, are to be exchanged as follows: For each bond deposited, 55 per cent. of its par value in stock of the Otis Elevator Company will be given and 45 per cent., or \$450 in cash; for each share of preferred stock deposited, a General Electric 3½ per cent. debenture bond will be given; for each share of common stock deposited of the par value of \$100 will be given 41.9 per cent. of a share of the par value of \$100 of the common stock of the Otis Elevator Company and 20.42 per cent. of the General Electric Company 40 year gold debenture bonds of the par value of \$100. The options which the security holders of the Sprague Electric Company are requested to give expire July 10.

It is explained that the reason Otis Elevator stock appears in the exchange of securities is due to the fact that some years ago the Sprague Electric Company sold their elevator business to the Otis Company, for which they received stock of that company. This has been in the treasury, and what amounts to a distribution of the company's treasury assets will take place before the actual absorption is completed.

It is announced that the agreement shall not become operative and binding until President John Markle has procured the consent of at least 75 per cent. of each of the three classes of Sprague Electric Company's securities.

The capital stock of the Sprague Electric Company is \$5,000,000, and that of the General Electric Company is \$45,000,000. The absorption of the former company practically gives the General Electric and Westinghouse companies control of the manufacture of heavy electrical machinery.

**The Crucible Steel Company of America.**—Some changes among officials of the Crucible Steel Company of America, at Pittsburgh, have recently been made. Frank B. Smith, formerly secretary, has been made general manager of all the plants of the company, taking the place of Reuben Miller, Jr., who recently resigned. Reuben Miller, Sr., has again become a member of the Board of Directors. H. M. Babcock, who has been assistant to the president, has been made secretary, taking the office vacated by Frank B. Smith. The report that Jas. H. Park had resigned his position as third vice-president is untrue. It is reported that Chas. H. Halcomb, now president of the company, will soon retire, but this has not been officially confirmed.

**Fuel Oil Burning.**—We have received from the National Oil Burner & Equipment Company of St. Louis a pamphlet describing their automatic system of feeding fuel oil to boilers and other furnaces. An elaborate test of these burners under a boiler generating 110 horsepower showed a consumption of 1 barrel of oil in 105 minutes, this being at the rate of 2 barrels of oil to 1 ton of coal, or 1 gallon of oil every 2½ minutes. This company are prepared to equip any smelting plant with their system of heating, giving any heat desired up to 3000 degrees F. It is stated that by the use of their burners 25 per cent. can be saved of the original cost of smelting plants. By using this system the coke mineral deposit is entirely eliminated, greatly reducing the cost of flux. The heat required is secured much more quickly, thereby saving time and labor.

### Latest News from Worcester.

WORCESTER, MASS., May 27, 1902.—H. C. Barr & Co., who have been operating under a nine-hour schedule, have returned to a ten-hour schedule. As this firm took some of Prentice Bros.' work ten of their men went on strike Monday. Ten of the employees of L. Robbins also went on strike for the same reason. Although Prentice Bros.' work is being done at the shops of P. Blaisdell & Co. the union men have not gone out. The molders are again threatening to act in sympathy with the machinists by refusing to handle work intended for shops where strikes are in progress. The Teamsters' Union has formally voted to handle no work for these shops. Picketing is going on everywhere, but no trouble in the way of violence has resulted.

## MANUFACTURING.

### Iron and Steel.

Two new finishing mills will be added to the lower mills of the American Steel Hoop Company at Youngstown, Ohio. Some old works now on the site are being removed in order to make room for these new mills.

The Carnegie Sheet Steel Company of Pittsburgh will let contracts in a few days for a six-mill plant, to be erected at West Carnegie. Two basic open hearth steel furnaces, with a capacity of about 125 tons per day, will be installed. Work will be commenced on contracts at the very earliest possible time and pushed to completion as rapidly as conditions will permit. The plant will be in no way connected with the Carnegie Tube Company. The Pittsburgh Construction Company will do the grading and put in the foundations. Edward E. Erikson, consulting engineer, of Pittsburgh, has been given the contract for two 25-ton basic open hearth furnaces, and the American Bridge Company will erect the buildings.

The Showmut Iron Company of Duluth, Minn., have been incorporated with a capital of \$50,000.

The Chicago Jupiter Steel Company, at Pierre, S. D., have been incorporated with a capital of \$2,000,000. The incorporators are John Pershing, Wallace Lowell and Ivan W. Goodner.

Warren B. Thomas and others of Johnstown, Pa., have bought the tin plate plant at that place formerly operated by the American Tin Plate Company, and will remodel the works and take up some other line of manufacture. As to what this will be has not been fully determined upon, but will be in a short time.

The National Works of the American Tin Plate Company, at Monessen, Pa., are to be very much enlarged. This has been a 12-mill plant, but is now being increased to 24 mills, two of which are in operation, making a total of 14 in all that are running. The remainder of the new mills will be started as fast as they are finished. When the entire 24 mills have been started the National Works will be one of the largest plants owned by the American Tin Plate Company. This was the only plant owned by the American Tin Plate Company that was operated continuously last summer during the strike. With the loyal men at this works much assistance was given toward the starting of other plants before the strike was broken.

The Portsmouth Steel Company, Wheeling, W. Va., are getting the old Burgess plant at Portsmouth, Ohio, in readiness and hope to have the blooming mill and open hearth furnaces in operation by the middle of June. They have contracted with Henry Alken of Pittsburgh for one ingot stripper, with the McClintic-Marshall Construction Company of Pittsburgh for one crane runway and with the Case Mfg. Company of Columbus, Ohio, for a charging crane.

The Empire Steel & Iron Company, Catsauqua, Pa., are relining their furnace at Oxford, N. J., and making some repairs to the engine, preparatory to blowing her in about July 1. The company have for some little time been making improvements to their ore properties at Oxford, which include the erection of new boilers, air compressors and a central power plant.

The Cleveland Furnace Company have been organized under the laws of New Jersey, and the officers of the company are as follows: D. B. Meacham of Cleveland, president; S. W. Croxton, Cleveland, vice-president; C. Birdsall Smith, secretary and treasurer; David T. Croxton, general manager. The offices are located in the Perry-Payne Building, Cleveland. Mr. Julian Kennedy has been employed as consulting engineer. The blowing engines have been contracted for with the Mesta Machine Works of Pittsburgh. They have secured about 175 acres of land located about in the center of the city of Cleveland geographically, on the Cuyahoga River, Wheeling & Lake Erie Railroad, Belt Line and Baltimore & Ohio. The work will be pushed as rapidly as possible.

A dispatch from Anderson, Ind., reports that the local management of the American Tin Plate Company has received notice that the usual shut down in the factories will be omitted this summer. Surplus stocks are very light, and there being an ac-

tive demand it becomes necessary to continue in active operation.

The John A. Roebling's Sons Company, Trenton, N. J., on the 24th inst. announced an increase of wages to their 4000 employees averaging 10 per cent. The increase is a voluntary one and was made, as explained by Charles G. Roebling, "in consequence of the increased cost of living to which our employees have been subjected." The company's principal output is wire and wire rope, and they are now furnishing the wire cables for the new East River Bridge.

Information has been received from Chattanooga, Tenn., that No. 3 furnace of the Roane Iron Company is in full blast after a shut down of nine months. Before it was blown out it had been in constant service for six years. It has now been relined and equipped with the latest improvements. The daily capacity of the two furnaces which the Roane Company now have in blast is 325 tons.

Coosa Furnace, at Gadsden, Ala., recently purchased by J. M. Elliott and associates of Birmingham, Ala., will be operated by the Southern Car & Foundry Company.

The Tacoma Company, Tacoma, Wash., recently incorporated, have secured extensive ore properties in British Columbia and Alaska, and expect in the near future to commence the manufacture of iron at or near Tacoma. It is their intention at first to erect a 150-ton furnace and later build furnaces and rolling mills of about 650 tons capacity. The officers are Henry Hewitt, Jr., president; Edward H. James, secretary, and W. E. Bilven, treasurer.

A meeting of the stockholders of the Sharon Steel Company will soon be held in Sharon, Pa., at which a vote will be taken on a proposition to increase the capital stock from \$5,000,000 to \$6,000,000. The increased capital will be used to meet the cost of building two additional blast furnaces and four open hearth furnaces, the latter now under construction.

Chicago, Duluth and Cleveland capitalists identified with prominent iron and steel interests have organized the Zenith Furnace Company of Duluth, Minn., with a capital stock of \$250,000, and have purchased the West Duluth Furnace together with 116 acres of land adjoining the furnace property. The stack, which has a capacity of about 200 tons per day, will be put in prime condition and it is expected will blow in July. The officers are A. B. Wolvin, president; C. P. Wheeler, vice-president, and Mr. Washburne, secretary. W. L. Brown, of Pickands, Brown & Co., is a director.

It is expected that the South Chicago Furnace, which recently met with an accident, will blow in within the next few days, repairs being about completed.

We can state on official authority that the report that the Republic Iron & Steel Company would build a blast furnace at Haselton, Ohio, is incorrect.

It is probable that the Mingo mill of the American Steel Hoop Company, at Mingo Junction, Ohio, in which steel hoops and bars are rolled, will be removed to the Duquesne Steel Works of the Carnegie Steel Company. Plans for removal of this mill to Duquesne are under consideration and it is likely will be carried out. The Mingo mill contains two gas heating furnaces and a 10-inch continuous Belgian mill. The report that it was the intention to remove the entire Mingo Junction plant of the National Steel Company to Duquesne is, of course, absurd.

The George A. Hogg Iron & Steel Foundry Company of Pittsburgh, manufacturers of rolling mill and tin plate mill machinery, are at present very busy, running their entire plant night and day. Among the orders recently received is a large order from the Louisville Bolt & Iron Company of Louisville, Ky., for a 32 x 72 inch Aetna rolling mill engine, a 26 x 48 inch Aetna rolling mill engine, a 20-inch train for rolling sheet bars and consisting of three high pinions, three high roughing rolls and three high finishing rolls; a 48-inch squeezer, a 26-inch sheet train consisting of two hot mills and one cold mill and a 38-inch roll lathe. They also recently received orders for a 38-inch roll lathe from the Maryland Sheet & Steel Company of Cumberland, Md.; a 24-inch roll lathe from the Superior Steel Company of Carnegie, Pa.; a 24-inch roll lathe from the Cohoes Rolling Mill Company of Cohoes, N. Y., and a 24-inch roll lathe from the Illinois Steel Company of Joliet, Ill.

The Bostwick Steel Lath Company of Niles, Ohio, have decided not to move their plant to Warren, Ohio, as contemplated, but instead have bought a site of 8 acres on the Erie Railroad, near Niles. The concern will erect new buildings and greatly increase their output of steel lathing.

#### General Machinery.

C. C. Bradley & Son, manufacturers of carriage shaft couplings, and the Bradley Company, manufacturers of power hammers and forges, Syracuse, N. Y., have purchased two acres of land upon which they will erect a new plant and remove their present works some time during the next 12 months. No new equipment will be required.

J. C. Crossen & Sons, Cambridge, Ohio, are erecting a new machine shop, 35 x 120 feet, with necessary offices and buildings. All machinery has been purchased from Pittsburgh and Cincinnati parties.

Complete equipment is required by the Chicago, Kalamazoo

& Saginaw Railway Company for the small repair shop and round house they will erect south of the passenger station at Kalamazoo, Mich., plans for which are now being prepared.

The York Mfg. Company, York, Pa., have recently secured the following orders: Refrigerating plant of 20 tons capacity for the Milstadt Brewing Company, Milstadt, Ill.; machinery for 25-ton ice making plant for the National Refrigerator Company, Pasadena, Cal.; two 125-ton cross compound condensing machines and compression sides for the Western Packing Company, Denver, Col.; 6-ton ice making plant for the Planters' Oil Mill, Morrilton, Ark., and machinery for 25-ton ice plant at Sharon for M. Greenwood & Sons of Pittsburgh, Pa.

The Powell Company, 400 North Second street, St. Louis, Mo., have incorporated as the Powell Engineers' Supply Company to do a general engineer, mill, factory and electrical supply business, also to manufacture special packings. The company advise us that they are looking for good agencies in steam and electrical appliances.

The Tampa Machine Works, James H. Wells, proprietor, Tampa, Fla., have sold their jobbing business and stock to F. S. Purcell of the Excelsior Machine Works. The manufacture of shafting straighteners is still continued.

Fred. B. Oliver, formerly president of the Smith Machine Screw Company of Northampton, whose affairs are being closed up, and others have organized the Oliver Machine Screw Company, and have leased the Lord plant on Freedom street, Athol, Mass., which they are equipping for the manufacture of screws and screw machine products. Most of the machinery was purchased from the old company.

Wickes Brothers, Saginaw, Mich., engineers and manufacturers of boilers, heaters, saw mill machinery, &c., have purchased the Davis-Chambers white lead works and considerable adjoining property in Pittsburgh, Pa., which they will improve by the erection of large machine and boiler shops, to be operated as a branch of the Saginaw works. The company recently acquired a large machinery warehouse in Jersey City.

The Fred. J. Swaine Company, St. Louis, Mo., manufacturers of presses, dies and sheet metal machinery, have purchased a site, 111 x 125 feet, at Seventh and O'Fallon streets, on which they will erect a modern plant twice the size of the present one. The new shops will comprise a press department, equipped with traveling cranes, hoists, planers, boring mills and a number of smaller tools; die department, equipped with several special tools for the handling of small special work; pattern making department, drafting rooms and blacksmith shops. They also intend to add four furnaces for welding and hardening, which has of late become quite an item in their business.

The Carter & Hakes Machine Company, Winsted, Conn., manufacturers of milling machines, machine tools, &c., have nearly doubled the capacity of their plant and are prepared to build special machinery in addition to their regular line of work, a quantity of which they are about completing for a concern in Buffalo, N. Y.

The Kemp Smith Mfg. Company, Milwaukee, Wis., are placing on the market the Kemp Smith No. 12 plain milling machine, which is motor driven. The motor is of constant speed and carries on its shaft a pinion gearing into the wheel carried on the upper cone pulley shaft.

The Cleveland Pneumatic Tool Company of Cleveland, Ohio, have appointed the Compressed Air Machinery Company of San Francisco, Cal., to represent them on the Pacific Coast.

The Florence Pump & Lumber Company of Florence, Ala., a branch of the Dempster Mill Mfg. Company of Beatrice, Neb., have broken ground at Memphis, Tenn., for a new plant, the yards and buildings of which will cover about 15 acres. The plant will cost about \$25,000, and as soon as completed the works at Florence will be moved to the new quarters. The company will install about 400 horse-power of boilers and a 300 horse-power Corliss engine, all of which have been purchased. They will not add any new machinery until they are settled in the new plant. They are also building 100 houses for their employees, covering nine blocks.

The E. F. Reece Company, Greenfield, Mass., have posted notice in their works that from June 1 to October 1 they will run 55 hours per week, stopping Saturday at noon. All day hands who work 55 hours will receive full week's pay same as heretofore.

The Gateway City Steel Tank & Roofing Company, La Crosse, Wis., manufacturers of galvanized steel tanks, bathtubs, pails, roofing, siding, &c., are installing a new plant, and though they have purchased most of the required machinery, they will shortly be in the market for a stamping machine for the manufacture of ceiling, corrugated iron siding, &c., and considerable other machinery, as well as a 10 horse-power motor, shafting, &c. They advise us that they would like to purchase, if possible, a conductor pipe and eaves trough machine.

The Columbus Steel Rolling Shutter Company, Columbus, Ohio, recently organized, are purchasing the machinery for their new plant. For the present they are equipping an existing plant, but later they expect to erect a new plant especially adapted to their business. The officers are: Samuel P. Elliott,



president and treasurer; J. W. Cartzdafner, vice-president; S. A. Webb, secretary, and Peter Ebener, superintendent.

A. Leschen & Sons Rope Company, St. Louis, Mo., have lately been shipping some large and important requirements for their product. Among them might be mentioned an automatic tramway for a gold mining company in Southern California. They have also completed shipment of another tramway of large dimensions to Etzatlan, Mexico.

#### **Boilers, Engines, &c.**

The Curtis Machine Company, 10 West Grand street, Elizabeth, N. J., recently incorporated, have acquired a fully equipped plant and will manufacture small steam engines for automobiles and launches, and will sell and repair gasoline and electric carriages.

George W. Lord, 2238-2250 North Ninth street, Philadelphia, Pa., manufacturer of boiler compounds, has plans prepared for the erection of a new plant, 30 x 175 feet, five stories high. All machinery has been secured.

The Lookout Boiler & Mfg. Company, Chattanooga, Tenn., are erecting new buildings on the opposite side of the tracks of the Nashville, Chattanooga & St. Louis Railroad to their old works. Main building is 70 x 184 feet, with an L 25 x 88 feet. All the machinery of the old works is in good repair and will be transferred and addition of new machinery made, including a traveling crane of the latest type. It is expected the works will be occupied by July 1. The company are now and have been for some time full of work.

Some small tools are required by the Wolcott Windmill Company of Saginaw, Mich., for their new machine shop, which they have equipped for the manufacture of gasoline pumping engines. They expect to have this new department in operation in about 60 days, when they will be turning out about five engines a day. The machine tool equipment was furnished by the Marshall & Huschert Machinery Company of Chicago.

#### **Foundries.**

The Eagle Foundry & Machine Company, Allegheny, Pa., have completed plans for an extension to their plant to give an increased output of 200 per cent. The company increased their capital stock to \$50,000, and will rebuild their present foundry, enlarging it to 140 x 77 feet. A 77 x 100 foot machine shop, with a gallery, will also be built. The entire plant will be equipped with the latest improved appliances, including 15-ton electric traveling cranes. The company have at present a 7-ton cupola beside which a 16-ton cupola will be installed. The plant will be so arranged that raw material will be converted into finished product by regular stages without any unnecessary handling. The manufacture of machinery for machine shops is being considered. The plant will be completed by September.

The Wright & Finnie Foundry Company of Youngstown, Ohio, have been incorporated with a capital of \$20,000. The concern operate a foundry in Youngstown.

The Monessen Foundry & Machine Company, Monessen, Pa., have bought a new site and will build one of the largest foundries and machine shops in the Monongahela valley. The present plant employs about 50 men and the new works will give employment to about double that number.

The Iowa Iron Works, Dubuque, Iowa, will rebuild the part of their plant recently destroyed by fire on a much larger scale.

The Braddock Brass Foundry & Casting Company have been organized at Braddock, Pa., and will build a foundry and machine shop at that place for the manufacture of iron and brass castings. The new concern include some former members of the Braddock Machine & Mfg. Company, and are capitalized at \$200,000.

The Pittsburgh Steel Foundry, with works at Glassport, Pa., are making shipments to the Westinghouse Electric & Mfg. Company, at East Pittsburgh, on an order for eight large steel hubs which are being made of open hearth steel. The order was entered by the Pittsburgh Steel Foundry Company some time ago.

The Johnson City Foundry & Machine Company, Johnson City, Tenn., manufacturers of brass and iron castings and turbine wheels, have been incorporated as the Johnson City Foundry & Machine Works. The new company will continue the business along the same lines, but on a more extensive scale. The incorporators are J. Allen Smith, R. M. Rhea and Thomas J. Peed of Knoxville and George W. and B. J. Sifton of Kansas City. George W. Sifton and Thomas J. Peed will be managers.

#### **Bridges and Buildings.**

McCreary & Willard, Spokane, Wash., general railroad contractors, have added to their line steel bridge erection, and have been awarded a contract by the Washington & Columbia River Railroad Company for the erection of three steel bridges in the Walla Walla River district. The contract price is \$12,000.

The American Bridge Company have received the contract for the erection of the new boiler shop, 201 x 421 feet, for the Titusville Iron Company, at Titusville, Pa.

Levering & Garrigues, 552 West Twenty-third street, New York City, have purchased a site in Plainfield, N. J., where they

will erect a shop for the fabrication of structural steel and where they will carry a large stock of structural iron and steel.

#### **Fires.**

The plant of the Mitchell Brothers Fire Brick Company, St. Louis, Mo., was destroyed by fire May 24, entailing a loss of about \$80,000.

The Lenox Shear Works, owned and conducted by John Bateman, at Brookfield, Conn., were destroyed by fire May 21. The loss is estimated at about \$10,000.

The Bradbury piano factory, at Raymond and Willoughby streets, Brooklyn, N. Y., was destroyed by fire May 21. The loss is estimated at about \$250,000.

Fire at Lansing, Mich., May 27, totally destroyed the plants of the Richerd Lumber Company, and the Alexander Furnace Company, and damaged the plant of the Lansing Veneered Door Company. The total loss is about \$55,000.

#### **Hardware.**

R. Wallace & Sons' Mfg. Company, silversmiths, Wallingford, Conn., are erecting three new buildings, one 40 x 144 feet, four stories high, being an addition to their solid silver department; one 40 x 80 feet, one story, being an addition to their cutlery department, and one 35 x 85 feet, one story, being an addition to their machinists' department. All the buildings are of brick. The additional floor space aggregates about 30,000 square feet.

The Voss Bros. Mfg. Company, Davenport, Iowa, state that their business has grown so rapidly that they have been unable to enlarge their plant fast enough to keep up with it. It is just a year since they started to manufacture the Ocean Wave washer. At that time it was absolutely unknown, and it was decided when placing it on the market to sell it to the trade direct instead of selling it through the jobbers. In this way they gave the exclusive agency to one good live hardware dealer in each town. They started on this basis, and before two months had passed they had created demands for their machine which their capacity at that time was unable to supply. An addition to their factory was then built, but trade grew so rapidly that by the time it was completed their business was more than the capacity of the new addition could handle. Since that time several additions have been made to the factory, and each time they have experienced the same difficulty. They have again decided to increase their capacity by a much larger addition than they have made heretofore. A new engine room has been completed and a 100 horse-power engine and boiler for manufacturing purposes have been installed, which will double their capacity. They are now manufacturing 200 machines a day.

Inasmuch as their business has been growing to such an extent that they cannot take care of it in their present location, Phoenix Hardware Mfg. Company, Phoenix, N. Y., have purchased the plant of the New York Wire Cloth Company, Homer, N. Y., and expect to move to that point in July next. With ample room and improved facilities in their new location, the company believe they will be able to handle satisfactorily the demands of the trade.

Garden City Wire & Iron Works, Chicago, have been organized with a capital of \$15,000 for the purpose of manufacturing wire goods. The incorporators are Thomas Doolin, J. J. Cummings and W. J. Cummings.

The Fancy Cutlery Company, Milwaukee, have been organized with a capital of \$2000. The incorporators are Philip H. Hamm, A. J. Stoessel and Emily Hamm.

The Aurora Acetylene Gas Company, Chattanooga, Tenn., have been awarded a gold medal on their machine at the Charleston Exposition. We are advised that they are getting more orders for their machine than their present capacity will permit them to fill.

The Automatic Scale Company of Chattanooga, Tenn., who have recently been granted a charter, have completed samples of a counter computing scale and an arithmetical computing scale which are attracting considerable attention for their simplicity, accuracy and combinations which can be computed on them. There will be a meeting of those interested in a few days, when they expect to decide on the location of their plant and will begin the manufacture of the scales.

The Chattanooga Plow Company, Chattanooga, Tenn., state that their fiscal year just closed has been very prosperous, having done the largest business in their history, while they have spent \$20,000 in betterments. The outlook for the present year is equally encouraging. They will at once begin the erection of a paint shop, 128 x 66 feet, of two stories, and will also make other additions during the year. They have purchased the patent Dixie reversible disk plow and will immediately engage in its manufacture. They also expect to add some other kindred implements to their line. They are employing 350 hands, and will increase the number as soon as more room has been provided.

The Newell-Sanders Plow Company, Chattanooga, Tenn., are building a new factory at the corner of Boyce and Henry streets. Their purpose is to give exclusive attention to the making of disk plows.

The D. M. Steward Mfg. Company, Chattanooga, Tenn., state

that they are crowded with orders for their metal workers' crayons and slate pencils, more particularly from foreign countries and especially England, France and Australia. Among large contracts they have entered into is one to supply the London, England, city schools with pencils. Export business in their other lines, including lava electric insulators, gas burners for acetylene and coal gas, is growing rapidly. The company are putting on the market a new preparation, called Stainoff, for removing machinery paints and oils from the hands.

The Angle Steel Sled Company of Kalamazoo, Mich., have been organized with a capital of \$100,000. The company will manufacture steel sleds of an advanced type of construction. The incorporators are Dr. O. A. La Crone, H. G. M. Howard, Samuel J. Dunkley and George E. Bardeen of Otsego.

The Kilborn & Bishop Company, New Haven, Conn., manufacturers of drop forgings and forged hardware, have just moved into the factory which they purchased about two months ago and which lies adjacent to their own property. This gives them greatly increased area for the production of their goods and the future growth of business. Since 1900 they have branched out somewhat in the manufacture of forged hardware, but their specialty still is the drop forging of special designs and patterns.

The J. A. & D. P. Cooper Company, Struthers, Ohio, manufacturers of carriage gear woods and ironed parts, advise us that during the season just ending they have been busy every day and that the prospects for future trade are very good. Their business extends all over the United States, but little exporting being done. They refer to the manufacture and sale of carriages during the past year as probably the largest in the history of the trade.

A new brick factory building, to be used for stock rooms, general offices and the manufacture of paper boxes, will be erected during the summer months by the North & Judd Mfg. Company, New Britain, Conn. Plans and specifications are now being prepared and work will be commenced as soon as satisfactory contracts are closed. The new building will front on East Main street, extending from the present office to Laurel street, size 60 x 135 feet. It will be five stories in height. The company have also planned to erect a thoroughly up to date brass foundry on the west side of Stanley street, covering a portion of their foundry yard. This building will be 65 x 112 feet, one story in height.

The I-XL & Goshen Pump Company, Goshen, Ind., manufacturers of window screens and screen doors, wood and chain pumps, kitchen furniture, ladders, lawn swings, &c., have just broken ground for a new brick finishing room, 48 x 222 feet, two stories and basement. They expect to have the building completed by August 1.

The Western Rubber Company, Goshen, Ind., have incorporated with a capital of \$75,000, and purchased the plant formerly occupied by the Ariel Bicycle Company. They are adding new buildings and a new engine and boiler. W. D. Middleton is manager, and Theo. Garvin, secretary and treasurer.

The Goshen Rubber Works, Goshen, Ind., are having plans prepared for a new brick addition, 48 x 70 feet, two stories and basement.

#### Miscellaneous.

The Frick & Lindsay Company of Pittsburgh, dealers in manufacturers' supplies, have removed to 109-111 Wood street, Pittsburgh, where they will have much better and larger facilities for handling their trade.

The Iron Exploration Company, Pierre, South Dakota, have been organized with a capital of \$100,000. The incorporators are Fred B. Rossow, Axel Carlson, Arnt Carlson, L. L. Stephens, and F. A. Stephens.

The India Refining Company, Philadelphia, Pa., coconut products, have plans prepared for rebuilding their plant at Swanson & McKean streets, recently destroyed by fire. The buildings will include a refinery and boiler house, 48 x 112 feet, three stories, and a storage house 64 feet square.

The Fore River Ship & Engine Company, Quincy Point, Boston Harbor, Mass., have received an order from the New York, New Haven & Hartford Railroad for two large steel car floats, 317 feet long, 40 feet wide, and 10 feet 4 inches in depth. Each float will have three tracks upon which 23 50-ton cars may be set at one time, and will have 16 water tight compartments, making them practically unsinkable.

The Avalanche Mill Company, Indianapolis, Ind., have incorporated with a capital stock of \$15,000 for the purpose of putting on the market a small feed mill. The machines for the present will be made by contract. Address communications to Chester Bradford.

The Pneumatic Cyanide Process Company, Denver, Col., have been incorporated with a capital stock of \$500,000 for the purpose of selling the rights to use their patented process for the recovery of precious metals from the ore. The company have contracted with the Colorado Iron Works of that city to manufacture the machinery and equipment, who are at present building a number of milling plants for companies in the West.

D. E. Makepeace of Attleboro, Mass., has purchased the plant of the Pope's Island Mfg. Company of New Bedford, and

will move it to Waterbury, Conn., where the manufacture of brass and noncorrosive metal will be continued.

The Michigan Steel Boat Company, Detroit, Mich., are constructing a third steel boat plant. The building will be three stories in height, 80 x 300 feet. It is situated on the river front at the foot of Concord avenue, adjoining the new launch repository of the company.

The Acorn Brass Works, Chicago, have increased their capital stock from \$50,000 to \$100,000, and also increased the number of directors from three to five.

The Northwestern Metal Company, Milwaukee, have been organized with a capital stock of \$2500. The incorporators are Peter Cassel, J. P. Cassel, Jr., and John B. Wendell.

F. A. Bergman Sons Company, Chicago, have been incorporated with a capital of \$10,000, for the purpose of manufacturing sheet metal goods. The incorporators are J. M. H. Burgett, E. R. Ede, F. A. Bergman.

The Parkston Roller Mill, Parkston, S. D., are remodeling their mill and have placed a contract for the new equipment with the Wilford Mfg. Company of Minneapolis, Minn.

The Energy Elevator Company, Philadelphia, Pa., who were established in 1887, have been incorporated with a capital stock of \$25,000. The officers of the new company are: John A. Currie, president; Samuel H. Garrett, secretary, and Adolph G. Wuest, treasurer. The manufacture of elevators, dumb waiters and hoists will be continued.

The Sidney Steel Scraper Company of Sidney, Ohio, have been reorganized by New York and Hamilton, Ohio, interests. The company will have a capital stock of \$200,000; one-half common stock, and the balance 6 per cent. cumulative preferred stock. Bonds to the amount of \$100,000 will be issued. The new officers are: William Haslupp, president and general manager; Benj. Strauss, vice-president; J. D. Barnes, secretary-treasurer; directors are the above and W. A. Perry, H. C. Quinby of New York and K. K. Laven, Jersey City. The capacity of the plant will be largely increased by the erection of new buildings.

The Columbus Brass & Electric Company have been organized at Columbus, Ohio, to manufacture electrical appliances and supplies. Plans for a factory of considerable size are being prepared.

The Palmsville Metallic Binding Company of Palmsville, Ohio, have been incorporated with \$20,000 capital stock by W. C. Nason, G. A. Kaull, and C. J. Gates. They will manufacture metallic binding.

At a meeting of the stockholders of the Pittsburgh Stove & Range Company, held in Pittsburgh on Monday, May 19, it was decided that in order to provide funds for the building of a central works at Beaver, Pa., the company would sell several properties which are not needed. These include the Graff works, at Monongahela City, Pa.; Walters works, Sharpsburg, Pa., and other parcels of real estate in the Pittsburgh district. It is the intention of the Pittsburgh Stove & Range Company to concentrate their different stove plants located in the Pittsburgh district into one large works at Beaver, Pa. Active work on the new plant will be started in a short time.

The Marlon Mfg. Company of Franklin, Pa., have declared a dividend of 10 per cent. and announce that hereafter dividends at the rate of 3 per cent. quarterly will be paid.

The employees of the machine shops of the National Transit Company, at Oil City, Pa., controlled by the Standard Oil Company, have been granted a voluntary advance in wages of 5 per cent.

The Birmingham Hide & Tallow Company, Birmingham, Ala., have bought ground, 140 x 200 feet, at the corner of Twenty-seventh street and Second avenue, on which they will erect a building of two stories, 30 x 140 feet. They hope to occupy it by the end of August next. Until the present the company have handled only hides and tallow and scrap iron, but in the new premises they will add second-hand machinery to their lines.

Pratt & Lambert, Long Island City, N. Y., varnish manufacturers, have purchased a site in Buffalo, N. Y., where they will erect a large plant this summer.

The Sanford-Day Iron Works, Knoxville, Tenn., have had several good sized contracts for manufacturing mining car wheels. They are now having made a complete line of patterns for wood and coal cook stoves to be ready for fall trade.

Half of the great chain made for the Eastern Shipbuilding Company of New London, Conn., by the Lebanon Chain Works of Lebanon, Pa., was shipped to New London May 21. The completed part measures 330 fathoms, or about 1980 feet, and weighs about 100 tons. It filled four gondola freight cars.

The Beals & Selkirk Trunk Company, Detroit, Mich., are having plans prepared for a new plant. It will consist of a main building, 50 x 245 feet, three stories, of brick; box factory, 50 x 125 feet, three stories, of brick; power house, 26 x 90 feet, and dry kiln, 25 x 40 feet. All machinery has been purchased.

The Aurora Acetylene Company, Chattanooga, Tenn., manufacturers of Aurora carbide feed acetylene generators, will increase their capacity by the erection of a substantial addition to their plant.



## The Iron and Metal Trades.

The requirements of the Steel trade are at present commanding the most attention. It is reported that the United States Steel Corporation are negotiating with the Valley furnaces for 100,000 tons of Bessemer Pig Iron for delivery next year, probably running into the second quarter. This follows heavy purchases of Bessemer Pig Iron by other consuming interests. If this negotiation is consummated the Valley furnaces will have their surplus product completely disposed of until next April at the earliest. It is further reported on good authority that the United States Steel Corporation have purchased 50,000 tons of Southern Basic Pig Iron. The price obtained is stated to be equal to \$19.15, Pittsburgh. Heavy quantities of foreign Ferromanganese have been purchased, mainly for delivery in and about Pittsburgh, aggregating 20,000 tons. Eastern Steel works have purchased about 6000 tons of Low Phosphorus Pig Iron in England at a price of about \$22.50 laid down here. These occurrences emphasize the activity prevailing among Steel manufacturers.

The continued strike of the Anthracite Coal miners is causing increasing trouble to Eastern consumers of Pig Iron. Several furnaces in Eastern Pennsylvania have been obliged to bank for lack of fuel, and others are doing very poorly because of an inadequate fuel supply, turning out a small product and not of desired grade. This is creating trouble among foundries particularly, and interferes seriously with the booking of new business.

The belief is now entertained that the blast furnace workers in Ohio and Western Pennsylvania will not strike June 1, as had been feared. It is confidently hoped that the difficulty has been overcome.

A large tonnage of foreign Steel Billets is being offered here through importing houses, so that the supply from this source would seem to be fairly adequate for early needs. Some sales of foreign Billets have been made during the week, but not in any large quantity, as far as can be ascertained. Negotiations are under way, however, for some good round lots. Foreign Beams and other Structural Shapes are selling in fair quantities.

The interesting statement is made from the West that for the first time in the history of the trade the implement manufacturers of any moment have, prior to June 1, placed their contracts for their yearly requirements, running from July to July.

General conditions throughout the Iron trade continue of a character to satisfy the most sanguine believer in a continuance of existing prosperity. Scarcity exists in so many lines and the consumers of all classes of products are so eagerly waiting for deliveries from furnaces and mills that it will require a considerable period to catch up even with all works running to their utmost capacity.

## A Comparison of Prices.

At date, one month and one year previous.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

May 28, May 21, Apr. 30, May 29,  
1902. 1902. 1902. 1901.

### PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia .....	\$19.75	\$19.75	\$19.75	\$15.00
Foundry Pig No. 2, Southern, Cincinnati .....	18.75	18.75	17.75	13.75
Foundry Pig No. 2, Local, Chicago .....	21.00	21.00	19.50	15.50
Bessemer Pig, Pittsburgh .....	21.00	21.00	20.00	16.00
Gray Forge, Pittsburgh .....	19.75	19.75	19.75	14.25
Lake Superior Charcoal, Chicago .....	23.00	23.00	22.50	17.00

### BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh .....	32.00	32.00	32.00	24.00
Steel Billets, Philadelphia .....	34.00	Nom.	33.00	26.25
Steel Billets, Chicago .....	.....	.....	.....	.....
Wire Rods, Pittsburgh .....	37.00	37.00	36.50	39.00
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00
Spikes, Tidewater .....	2.00	2.00	2.00	1.80
Splice Bars, Tidewater .....	1.60	1.60	1.60	1.40

### OLD MATERIAL:

O. Steel Rails, Chicago .....	18.00	17.50	17.50	13.00
O. Steel Rails, Philadelphia .....	21.00	21.00	21.00	16.00
O. Iron Rails, Chicago .....	24.00	24.00	24.00	18.50
O. Iron Rails, Philadelphia .....	24.50	24.50	26.00	19.50
O. Car Wheels, Chicago .....	20.50	20.00	19.00	16.50
O. Car Wheels, Philadelphia .....	19.50	19.50	19.50	17.50
Heavy Steel Scrap, Chicago .....	18.00	17.50	16.50	13.00

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia .....	2.00	2.00	1.92	1.55
Common Iron Bars, Chicago .....	1.80	1.85	1.90	1.55
Common Iron Bars, Pittsburgh .....	1.80	1.80	.....	1.45
Steel Bars, Tidewater .....	1.90	1.80	1.80	1.62½
Steel Bars, Pittsburgh .....	1.60	1.60	1.60	1.40
Tank Plates, Tidewater .....	1.95	1.95	1.95	1.80
Tank Plates, Pittsburgh .....	1.60	1.60	1.60	1.60
Beams, Tidewater .....	2.00	2.00	1.95	1.75
Beams, Pittsburgh .....	1.60	1.60	1.60	1.60
Angles, Tidewater .....	2.00	2.00	1.85	1.75
Angles, Pittsburgh .....	1.60	1.60	1.60	1.60
Skelp, Grooved Iron, Pittsburgh .....	2.22	2.22½	2.10	1.75
Skelp, Sheared Iron, Pittsburgh .....	2.25	2.25	2.15	1.80
Sheets, No. 27, Pittsburgh .....	2.95	2.95	3.00	3.20
Barb Wire, f.o.b. Pittsburgh .....	2.90	2.90	2.90	2.90
Wire Nails, f.o.b. Pittsburgh .....	2.05	2.05	2.05	2.30
Cut Nails, Mill .....	2.05	2.05	2.05	2.00

### METALS:

Copper, New York .....	12.37½	12.37½	11.75	17.00
Spelter, St. Louis .....	4.50	4.25	4.15	3.77½
Lead, New York .....	4.10	4.10	4.10	4.37½
Lead, St. Louis .....	4.00	4.00	4.00	4.25
Tin, New York .....	29.87½	30.00	28.25	28.35
Antimony, Hallett, New York .....	8.00	8.00	8.00	8.75
Nickel, New York .....	50.00	50.00	50.00	60.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York .....	4.19	4.19	4.19	4.19

## Chicago.

FISHER BUILDING, May 28, 1902.—(By Telegraph.)

Outside of the jobbing interest there has been less activity in the market for Iron and Steel, at least the volume of business has been smaller. The inquiry for Pig Iron has been fully as urgent as heretofore and trading has been checked only by the inability of the furnaces to meet the wants of consumers. Some Southern stacks have withdrawn from the market during the week, having sold their output up to the close of the year. With the exception of Bar Iron, which has been offered more freely with prices barely maintained, a stronger tone has prevailed for all intermediate and finished material, both of Iron and Steel, and jobbing prices of Plates, large sizes of Merchant Pipe and Boiler Tubes have been advanced. One feature of interest in the Steel market is the withdrawal from the market of a large producer until July, 1903. Business in Heavy Rails is held in abeyance, but in Track Supplies there has been an active movement. Domestic Billets are very scarce and prices are little better than normal, consumers finding it almost impossible to obtain the needed supplies even for late delivery. There has continued to be more inquiry for foreign material, both Billets and Shapes, but transactions have been light. One point of interest is the strengthening of the Coke market, surplus supply in this market having been speedily absorbed and shipments from the East having

been cut off by the heavy purchases in the Anthracite Coal district.

**Pig Iron.**—Stove foundries, Pipe works, machine shops, agricultural implement manufacturers, special foundries and general merchant foundries have been among the buyers in the local Pig Iron market during the week. The character of the trade has changed but little. It is well known that the principal large consumers have pretty well covered their wants for the balance of the current year, but in exceptional instances larger melters have only partially provided for their needs. Others who have ample Iron bought suddenly find themselves forced into the market to meet unexpected emergencies. The bulk of the business has been in small amounts ranging from one car to 500 tons, but there have continued to be occasional lots of 1000 tons and more placed for delivery during October, November and December. Orders are well distributed throughout the North and South, but gradually various furnaces are being compelled to withdraw from the market, one of the independent Southern furnaces reporting this condition to-day. Accidents, too, are cutting off some of the active Northern stacks, temporarily at least. Notwithstanding the unprecedentedly large production light stocks at furnaces and heavy melting by mills and foundries impart even greater strength if possible to the market. Prices of Northern Iron are without essential change—that is, for long delivery—but the Iron available for prompt shipment continues to command considerable premium. At the close Southern Iron is being held at 50c. to \$1 per ton higher than the prices current a week ago, sales having been made early in the week on the basis of \$16, Birmingham, for No. 2 Foundry, but subsequently contracts were booked at \$16.50, and at close \$17 is generally asked, while moderate amounts for immediate shipment have been sold on the basis of \$17.50 to \$18 for No. 2 Foundry, Birmingham. The restriction of the output of Pig Iron in the anthracite sections and the relief afforded in the East by imported Scotch Pig have a moral influence upon the industry in this section, but can scarcely be regarded as live factors in this market at the moment. One feature of interest is the relatively active demand for Silvery Iron. We quote as follows:

Lake Superior Charcoal.....	\$23.00 to \$24.00
Local Coke Foundry, No. 1.....	22.00 to 22.50
Local Coke Foundry, No. 2.....	21.00 to 21.50
Local Coke Foundry, No. 3.....	20.50 to 21.00
Local Scotch, No. 1.....	22.00 to 23.00
Ohio Strong Softeners, No. 1.....	24.00 to 24.50
Southern Silvery, according to Silicon.....	20.40 to 20.90
Southern Coke, No. 1.....	20.65 to 21.15
Southern Coke, No. 2.....	19.65 to 20.65
Southern Coke, No. 3.....	19.15 to 19.65
Southern Coke, No. 1 Soft.....	20.65 to 21.15
Southern Coke, No. 2 Soft.....	19.65 to 20.65
Foundry Forge.....	18.65 to 19.15
Southern Gray Forge.....	18.65 to 19.15
Southern Mottled.....	18.65 to 19.15
Southern Charcoal Softeners, according to Silicon.....	18.65 to 19.15
Alabama and Georgia Car Wheel.....	22.65 to 23.15
Malleable Bessemer.....	22.00 to 22.50
Standard Bessemer.....	20.00 to 20.50
Jackson County and Kentucky Silvery, 8 per cent Silicon.....	23.10 to 23.60

**Bars.**—All large buyers apparently have covered all probable contracts for several months to come, but there continues to be a fair business made up of a number of small orders. It is significant, however, that among a number of independent mills a weaker tone has developed, there being a disposition to accept contracts on a lower basis. In fact, one or two 1000-ton orders have been placed at concessions from prices previously ruling, and even for small amounts prices have not been fully maintained. It is anticipated that the market will decline to 1.75c., placing it on a level with the prices current for Soft Steel Bars. Prices for Bar Iron range from 1.80c. to 1.90c. for mill shipments, and 2.25c., full extras, from store, Chicago. There has been a liberal movement of Steel Bars on old contracts, and a fair run of new business in moderate amounts. Prices have remained firm at 1.75c. to 1.90c. for Soft Steel Bars, 2.15c. to 2.25c. for Hoops and 2.25c. for Angles, base, mill shipments. The jobbing trade has continued active with full prices readily realized; Soft Steel Bars selling at 2c. to 2.25c., and Angles at 2.50c., and Hoops at 2.50c., base, from store.

**Structural Material.**—There is less activity in the

market, buyers being less urgent, and most all large contracts for this year having been placed. This may be due in part at least to the discouragement of the mills, which are well provided with orders for months ahead, the result being that some large producers have withdrawn from the market during the week until July 1, 1903. Individual orders for domestic material have not been large, few, if any, exceeding 1000 to 1500 tons. There has continued to be a good inquiry for foreign Steel, but no transactions of moment have been closed during the week. Prices of domestic manufacture have continued firm and unchanged. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c. Small lots of Beams and Channels from local yards are quoted at 2.50c. to 3.50c.; Angles, 2.50c. to 3.50c. rates; Tees, 2.55c. to 3.50c. rates.

**Plates.**—The demand has continued active, but mills are still well sold ahead, and with much difficulty in shipping orders promptly there is a disposition to discourage new business in round lots. Mill prices are unchanged, as follows: Tank Plate, ¼ inch and heavier, 1.75c. to 1.90c.; Flange, 1.75c. to 2c.; Marine, 1.95c. to 2.25c. From store the following prices are obtained: ¼ inch and heavier Tank Steel, 2c. to 2.10c.; No. 8 Tank Steel, 2.15c. to 2.25c., and Flange Steel, 2.10c. to 2.35c., all f.o.b. warehouse, Chicago. The jobbing trade, however, is especially active and a stronger tone has developed, resulting in higher prices for small lots from store. One-half inch and heavier Tank Steel is now held at 2.25c.; No. 8 Tank Steel at 2.40c., and Flange Steel at 2.50c., all f.o.b. warehouse, Chicago. It should be noted, however, that mills having warehouses in Chicago continue to sell in round lots to large buyers at 2c., 2.10c. and 2.15c., respectively, from store.

**Sheets.**—There has continued to be considerable animation, and the market has remained firm with full prices. Mill shipments of No. 27 Black Sheets are quoted at 3.15c. to 3.25c., Chicago, and small lots from store at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, mill shipments being held on the basis of 4.35c. to 4.50c., Chicago, and small lots from store at 4.70c. to 4.75c. for No. 27.

**Cast Pipe.**—Prices have again been advanced from \$1 to \$2 per ton, with a fair run of small orders, both for new and second-hand material, but the sharp advance in prices is more effectually cutting off inquiries from municipalities. Cast Iron Water Pipe is quoted by manufacturers as follows: 4-inch, \$34; 6-inch, \$32; 8-inch and upward, \$31; Gas Pipe, \$1 per ton higher than Water, f.o.b. Chicago.

**Merchant Pipe.**—A strong tone has developed, and prices of 14 inches outside diameter and larger have been advanced approximately 7 per cent. Small sizes are unchanged. Carload lots are quoted as follows, random lengths: Black, ½ to ½ inch, 56½ off; ¾ to 12 inches, 63½ off; Galvanized, ½ to ½ inch, 43½ off; ¾ to 12 inches, 50½ off.

**Boiler Tubes.**—Higher prices have resulted in sympathy with raw material, although there has been but a moderate degree of activity. Quotations for mill shipment are as follows:

	Steel.	Iron.
1 to 1½ inches.....	42½	39
1½ to 2½ inches.....	55½	38
2½ to 5 inches.....	61	48
6 inches and larger.....	55½	38

The prices from store are as follows:

	Steel.	Iron.
1 to 1½ inches.....	35	35
1½ to 2½ inches.....	47½	32½
2½ to 5 inches.....	55	42½
6 inches and larger.....	47½	..

**Merchant Steel.**—The withdrawal of one of the large independent mills from the market until July 1, 1903, emphasizes the reports previously made that the mills are well sold ahead for months to come. It is worthy of note, too, that probably for the first time in the history of the trade the Implement manufacturers of any moment have all placed their contracts prior to June 1. As a rule this business extends into the summer months. The jobbing trade continues active and the little Steel available for immediate delivery from store commands full prices. Mill shipments are quoted as follows:



Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.65c. to 2.75c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 50 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted at 7c. for mill shipments; specials, 12c. upward.

**Rails and Track Supplies.**—The large mills have shown a disposition to discourage all kinds of business in both Heavy and Light Sections, and while there is a heavy tonnage in sight for 1903 delivery, the impression is abroad that prices will not be named until after July 1, although nothing definite is known, as this matter depends upon the action of the presidents of the various companies. Two thousand tons of new 80-lb. Steel Rails, including continuous Rail Joints, have been sold at \$32, Chicago, for delivery in Iowa. This is a resale of a lot which has been under litigation for some time. There have also been some resales of Heavy Sections at prices considerably above those current at the mill. The demand for Light Sections has continued active, but sales and resales have only been made in a small way. There has been further inquiry for foreign Rails for Pacific Coast shipment, but no transactions have come to the surface during the week. The mill prices for Heavy Sections are firm at \$28 for first, and \$27 for second quality. Light Sections are quotable at \$33 to \$38. Resales command an advance of from \$3 to \$5 per ton in a small way. The demand for Track Supplies has been unusually heavy and full prices have been readily obtained. Fastenings are quoted in carload lots: Splice Bars or Angle Bars, 2c.; Spikes, 2.30c. to 2.40c.; Track Bolts, with Hexagon Nuts, 3c. to 3.45c.; Square Nuts, 2.85c. to 3.10c.

**Billets.**—Both domestic Open Hearth and domestic Bessemer Billets are very scarce, it being difficult to purchase anything of moment for summer delivery at any price. The demand is as urgent as ever and efforts are still being made to purchase foreign material at prices which will admit of competition with finished material made from domestic Billets. It is difficult, however, to purchase under \$34, Chicago. Domestic Open Hearth Billets are still quoted at \$36 to \$42, Chicago, according to the analysis, time of delivery and responsibility of the buyer.

**Old Material.**—The opinion prevails, especially among dealers and consumers, that a weaker tone has been developed, there being freer offering of various kinds. There is a good demand, however, and an easier feeling can scarcely be but temporary under the circumstances. It is worthy of note, too, that holders ask, and in a number of instances obtain, 50c. to \$1 per ton above quotations here given, the prices in the following table representing more nearly buyers' than sellers' views. The market for Relaying Rails is very irregular. Dealers would purchase at \$29, while holders are demanding \$31, and under the circumstances trading is held in abeyance. Old Car Wheels, because of the great scarcity of Charcoal Iron, are in better demand and with light offerings the market for them is relatively stronger and while dealers are bidding only \$20 to \$20.50 holders are demanding \$21 to \$22. The following are the approximate quotations per gross ton:

Old Iron Rails.....	\$24.00 to \$25.00
Old Steel Rails, mixed lengths.....	18.00 to 19.00
Old Steel Rails, long lengths.....	23.00 to 24.00
Heavy Relaying Rails.....	29.00 to 31.00
Old Car Wheels.....	20.50 to 21.50
Heavy Melting Steel Scrap.....	18.00 to 19.00
Mixed Steel.....	15.50 to 16.00

The following quotations are per net ton:

Iron Fish Plates.....	\$22.00 to \$23.00
Iron Car Axles.....	24.00 to 24.50
Steel Car Axles.....	21.50 to 22.00
No. 1 Railroad Wrought.....	21.00 to 22.00
No. 2 Railroad Wrought.....	18.00 to 19.00
Shafting.....	18.50 to 19.00
No. 1 Dealers' Forge.....	16.00 to 16.50
No. 1 Bushing and Wrought Pipe.....	13.50 to 14.00
Iron Axle Turnings.....	14.00 to 15.00
Soft Steel Axle Turnings.....	13.50 to 14.00
Machine Shop Turnings.....	13.00 to 13.50
Cast Borings.....	9.00 to 9.25
Mixed Borings, &c.....	9.50 to 10.00
No. 1 Bollers, cut.....	13.00 to 13.50
Heavy Cast Scrap.....	14.50 to 15.00
Stove Plate and Light Cast Scrap.....	11.00 to 11.50
Railroad Malleable.....	16.00 to 16.50
Agricultural Malleable.....	14.00 to 14.50

**Metals.**—The market has continued firm in sympathy with primary points, although there has been no marked degree of activity. Lake sells in carloads at 13¼c.; Pig Lead has remained firm but quiet at 4.05c. for Desilverized in 50-ton lots and 4.07½c. to 4.10c. for carload lots. Selling prices on small lots of Old Metal are as follows: Heavy Cut Copper, 11½c.; Red Brass, 11¼c.; Copper Bottoms, 10¼c.; Pipe Lead, 3.90c.; Zinc, 3.20c.

**Coke.**—Heavy sales of Coke in the East have cut off shipments to this section and with an active demand here all surplus supply has been taken up, resulting in a stronger market with an advancing tendency, but prices are without essential change. Standard 72-hour Connellsville Foundry Coke is selling at \$5.25 to \$5.50 and Virginia and West Virginia at \$5 to \$5.50 per ton, Chicago.

## Philadelphia.

FORREST BUILDING, May 27, 1902.

The report this week should be what the trade are trying not to do, rather than what they are doing. Producers of both raw and finished materials are using their best efforts to avoid heavy engagements, for the reason that they have all the business they want, and a great deal more than they know what to do with. The strike in the Anthracite Coal regions, a partial strike among the puddlers, combined with uncertainty in other lines in other districts, is not conducive to confidence, so that the remark is frequently heard that "the less we do the better we like it." At the same time it is impossible to shut down entirely, but it is certainly true that neither buyers nor sellers are inclined to enter into heavy engagements under the conditions which now prevail. Prices are, therefore, very irregular, considerably dearer when immediate deliveries are guaranteed, tapering down from month to month, according to the length of time in which the deliveries are to be made.

**Pig Iron.**—It is hardly necessary to say that Iron is getting scarcer, and in view of the strike in the Anthracite Coal regions and the extreme difficulty in securing Coke, it is hard to find any satisfactory reason for expecting easier conditions in the near future. Some of the local furnaces will probably have to be banked for want of fuel, but there is some slight offset by the suspension of work at several of the Bar mills, and besides that, consumers in New England are transferring their business to other sources. English, Scotch and Canadian Iron is helping out a little, while the central West is taking some English Iron and a considerable amount from Virginia, consequently local Irons are supplying the local demand to a greater extent than is ordinarily the case. Nevertheless, with all the twisting and squirming there is a genuine and serious shortage, which places consumers in a most trying position, as they hardly know from day to day how long they will be able to hold out, as very few have more than a week's supply to fall back upon. Depending upon this week's shipments for next week's work is rather a slender thread, yet it is about as much as one-half of the consumers can depend upon at the present time, so that it is not strange that quick shipments of Pig Iron command fancy prices. With so many uncertainties surrounding the situation it would be useless to attempt any forecast in regard to the future, as everything depends upon influences which are as yet in embryo. The most trustworthy sources of supply, however, during the next few weeks will probably prove to be in foreign markets, prices there being about on a parity with our own, freight and duty paid, Middlesbro No. 3 being equivalent to \$18.75 to \$19. ex-ship, duty paid; Scotch brands of high grade, \$21 to \$22. American brands for delivery during the last four months of the year are about as follows, earlier deliveries at anywhere from \$1 to \$1.50 more money:

No. 1 X Foundry.....	\$20.50 to \$21.50
No. 2 X Foundry.....	19.75 to 20.50
No. 2 Plain.....	19.50 to 20.00
Standard Gray Forge.....	18.50 to 19.00
Ordinary Gray Forge.....	18.00 to 18.50
Basic.....	19.00 to 19.50

**Billets.**—The market is not as wild as it has been during the past several weeks, although Steel is still

hard to get. American Steel is nominal at about \$34 to \$35, English \$31.50 to \$32.50, and German at \$30 to \$30.50. Some sales of foreign are being made, but there is a general disposition to keep free from long contracts and take nothing that cannot be shipped within the next 30 or 60 days.

**Plates.**—There is a very satisfactory demand, but there is less pressure for deliveries, as the mills are keeping pretty well up to time. There is plenty of business, however, and if there is no interruption in the fuel supply the mills will make record production during the remainder of the year. Prices firm and unchanged, as follows: Small lots 2.10c. to 2.15c., but a fair average would be about as follows for carload lots and upward:  $\frac{1}{4}$ -inch and thicker, 2c. to 2.05c.; Universals, 2c. to 2.05c.; Flange, 2.10c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.; Charcoal Plates, C.H. No. 1,  $2\frac{1}{2}$ c.; C.H. No. 1 Flange, 3c.; C.H. No. 1 Flange Fire Box,  $3\frac{1}{2}$ c.

**Structural Material.**—There is nothing to be said under this heading, unless we repeat the oft told story of big demand, short supplies and continued delays in getting work out. Philadelphia will be a large consumer for many months to come, as the amount of construction work in preparation is beyond all former record. Mills are loaded down with orders, and the only prospect of relief seems to be in bringing material from abroad. Prices are unchanged, as follows: Beams and Channels, 15-inch and upward, 2.25c. to 2.50c.; Angles, 2.25c. to 2.50c. Store prices for immediate deliveries are about 2.40c. to 2.60c. for imported Angles.

**Bars.**—Reports from the Bar mills show a considerable difference of opinion. The official prices are unchanged and it is claimed that they are actual selling prices, but the trouble is that in most cases they cannot take orders. Still at about 2c. for Refined Iron and 1.90c. for Steel somebody can always be found to accept orders, but it is not as easy to get prompt deliveries. Matters are in a very unsettled condition, however, and it should cause no surprise if prices go higher before midsummer is reached.

**Sheets.**—There is a good demand at unchanged prices. Mills are making full time and trying to get in shape for the rush of business which is expected later on. Prices firm, as follows, for best Sheets in carload lots and upward (a tenth less for common qualities): No. 10, 2.20c. to 2.30c.; No. 14, 2.50c.; Nos. 16 and 17, 2.90c.; Nos. 18-21, 3.10c.; Nos. 26, 27, 3.20c.; No. 28, 3.30c.

**Old Material.**—Very mixed conditions are reported in the Old Material trade. Owing to the suspension of work at several large mills shipments are postponed, which affects prices probably \$1 per ton on some grades. Others command full prices, such as \$30 for Iron Axles, \$27.50 for Steel Axles, \$18.50 for Machinery Cast, &c. Arrivals from abroad are pretty large, but when not taken at fairly good prices the owners give orders to store waiting for a more active market. Bids and offers for deliveries in buyers' yards are about as follows: Low Phosphorus Scrap, \$25 to \$26; Heavy Melting Steel, \$21 to \$21.50; Steel Rails, short lengths, \$21 to \$21.50; Choice Railroad Scrap, \$23 to \$24; No. 1 Yard Scrap, \$19 to \$20; No. 2 Light Forge, \$17 to \$18; No. 2 Light, old, \$15 to \$16; Machinery Cast, \$18 to \$18.50; Iron Rails, \$24.50 to \$25.50; Old Car Wheels, \$19.50 to \$20.50; Iron Axles, \$29 to \$30; Steel Axles, \$27 to \$28; Wrought Turnings, \$16 to \$17; Cast Borings, \$10 to \$10.50.

## St. Louis.

CHEMICAL BUILDING, May 28, 1902.—(By Telegraph.)

**Pig Iron.**—Little variation is to be noticed in the condition governing the Pig Iron situation at this point, and while sales are not running in heavy volume, yet considerable inquiry and demand for the last half is in evidence. The major part of the orders are now being executed on a basis of \$16, Birmingham, for No. 2 Foundry, but we do hear of some sales at a 25c. and 50c. higher rate. However, these sales are hardly of sufficient importance and volume to be of much influence on the mind of the buyer. The following is a range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$20.00 to \$20.25
Southern, No. 2 Foundry.....	19.25 to 19.50
Southern, No. 3 Foundry.....	18.75 to 19.00
Southern, No. 4 Foundry.....	18.25 to 18.50
No. 1 Soft.....	19.75 to 20.00
No. 2 Soft.....	19.25 to 19.50
Gray Forge.....	17.75 to 18.00
Southern Car Wheel Iron.....	23.00 to 24.00
Malleable Bessemer.....	22.00 to 23.00
Ohio Silvery, 8 per cent. Silicon.....	22.00 to 22.00
Ohio Strong Softener, No. 1.....	22.00 to 23.00
Ohio Strong Softener, No. 2.....	21.00 to 22.00

**Bars.**—The jobbing trade report the demand for Iron and Steel Bars as being of very good proportion and the price-list shows no change. We quote from the mills: Iron Bars at 1.90c.; Steel Bars at 1.90c. to 2c. Jobbers quote Iron Bars at 2.25c.; Steel Bars at 2.25c., full extras.

**Rails and Track Supplies.**—The condition of demand and inquiry for Rails and Track Supplies continues along recent lines and the volume of orders in hand are reported to be very large. We quote: Splice Bars at 2.10c. to 2.15c.; Bolts, Square Nuts, 3c. to 3.10c.; with Hexagon Nuts, 3.25c. to 3.30c.; Spikes, 2.35c. to 2.45c.

**Angles and Channels.**—The demand reported by the jobbing trade for Small Angles and Channels is satisfactory and quotation of 2.50c., base, continues for materials of this class.

**Sheets.**—The jobbers in Sheets are handling a very good volume of trade, and it includes all the various grades and sizes, and 3.60c. to 3.65c. continues to be the quotation for No. 27 Stove Pipe size.

**Pig Lead.**—The market conditions are very much as they have been and a very light run of transactions has marked the week under review. Chemical is quoted at 3.97 $\frac{1}{2}$ c. and Desilverized at 4c.

**Spelter.**—The labor troubles have seriously hampered smelting plans and have practically brought the activity in the market for Spelter to a halt. There is no general buying to be noted, and what few sales are being made are for urgent requirements and a considerable premium is being exacted. Owing to the short supply a satisfactory quotation for publication is hard to arrive at and we therefore withhold figures.

## Cincinnati.

FIFTH AND MAIN STS., May 28, 1902.—(By Telegraph.)

The last week developed quite a little trade in Southern Pig Iron. Buyers who had been holding off for various reasons and making effort to bear the market or have selling conditions modified appear to have given up their contentions and cleaned up nearly all the offerings in sight. Once again it is being said that there is no more Pig Iron to offer for delivery prior to next October. And for the last quarter, too, there seems to be a general opinion that the available unsold supply will prove to be a scanty one. The generally accepted price for forward delivery is still on the basis of \$16, Birmingham, for No. 2 Foundry. For prompt shipment, usually in small lots, the standard varies up to \$17, same basis. One house here report sales aggregating 6000 tons No. 2 Soft and Foundry for delivery last quarter on the \$16 basis. Generally speaking, the market is unchanged, with the surface indications rather in favor of those who prophesy a very still price-list next fall. Freight rate from Hanging Rock district is \$1.10, and from Birmingham \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$19.25 to \$19.75
Southern Coke, No. 2.....	18.75 to 19.25
Southern Coke, No. 3.....	18.25 to 18.75
Southern Coke, No. 4.....	17.75 to 18.25
Southern Coke, No. 1 Soft.....	19.25 to 19.75
Southern Coke, No. 2 Soft.....	18.75 to 19.25
Southern Coke, Gray Forge.....	17.75 to 18.25
Southern Coke, Mottled.....	17.75 to 18.25
Ohio Silvery, No. 1.....	21.85 to 22.35
Ohio Silvery, No. 2.....	21.35 to 21.85
Lake Superior Coke, No. 1.....	22.35 to 23.10
Lake Superior Coke, No. 2.....	21.85 to 22.35
Lake Superior Coke, No. 3.....	21.35 to 21.85

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$24.00 to \$24.75
Standard Southern Car Wheel, No. 2.....	23.50 to 24.00
Lake Superior Car Wheel and Malleable.....	23.00 to 24.00

**Plates and Bars.**—The market is strong and unchanged. We quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.90c. to 2c., with half extras; same, in small lots, 2.20c. with full extras; Steel Bars in carload lots, 1.72c., with half extras; same, in small lots,



2.20c., with full extras; Angles, 2.30c. to 2.50c.; Plates, 3-16 inch and heavier, 2c.

**Old Material.**—But little change to report in the general situation; the market is strong under a good demand. We quote dealers' buying prices, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$20 to \$21; Iron Axles, \$23 to \$25; Cast Machine Scrap, \$13 to \$14; Steel Rails, rolling mill lengths, \$24 to \$24.25; same, short lengths, \$17 to \$17.50; Car Wheels, \$19 to \$19.50; Cast Machine Scrap, \$14; No. 1 Wrought and Iron Axles on the basis of net tons.

### Cleveland.

CLEVELAND, OHIO, May 27, 1902.

**Iron Ore.**—The boats which are engaged in the transportation of Iron Ore on the chain of great lakes are being subjected to more serious delays now than have ever been known in the history of lake shipping. There is such a blockade of boats at the unloading ports on Lake Erie as compels each individual ship to wait from five to eight days in having her cargo lifted. These delays are so extraordinary that they are killing one-third of the vessel tonnage on the chain of lakes. Boats being so slow in unloading are appearing at the head of the lakes only in such numbers as can keep the docks there moving what they believe they must in order to ship away a certain portion during each month. This in turn adds to the constant congestion below. The delays are attributable first to a shortage of cars with which to move the material away from the dock and second to a certain overplus of tonnage in the Ore business for the amount of material that is to be brought down the lakes. The shippers during this spell of congestion at the lower lake ports have come out pretty solidly on rather a new basis, which overturns their policy of last year. The supply of boats at the head of the lakes being no greater than the needs, the rates are firm, but the announcement now is that any change in the situation appearing, the shippers will take advantage of the increased supply of tonnage and break the rates. The shippers are paying 75c. from Duluth to Ohio ports, with other ports basing their rates on the head of the lakes.

**Pig Iron.**—Most all of the interest in the Pig Iron trade is centered in the possible action of the furnace workmen. June 1 is the time set for their strike unless the furnacemen give in to their demands for three shifts instead of two, with no reduction in pay to the individuals. The furnacemen have not yielded and say that it is impossible for them to change the system now. They have consented to grant the men a certain increase in pay provided the change in the number of shifts is not insisted upon. Even should the strike occur on Sunday, it is said the men will not be able to take as many furnaces out of blast as they expected to, since they have not been oversuccessful in organizing the stacks in the Pittsburgh district and in Southern Ohio. The demand for Foundry Iron keeps up and inquiries are coming in daily. The furnacemen are now finding that, barring an interruption in production, they will be able to sell a little more Iron in the third quarter than they had expected and there will be a considerable excess for sale during the fourth quarter. This is due to the fact that the furnaces are going to produce more Iron than they anticipated and is no indication that any have not taken up the full measure of their contracts, the tendency being the other way. On these advanced sales \$21 for No. 2 in the Valley is being asked and \$21.50 for No. 1. The Southern furnaces will also have more Iron than they have sold, according to the reports here, and are asking \$17, Birmingham, with a \$3.70 freight added to make up the Cleveland quotation. Some few sales of Bessemer Iron have been made during the week at \$21.75 in the Valleys or \$22.50 in Cleveland, but it is admitted that the supply is not plentiful at that price. Small lots are appearing now and then, however, and on such sales the holders are getting about their own prices. The indications are that in the Bessemer, as in the Foundry trade, those having contracts are using all of the material themselves, and are not reselling any Iron to take quick profits without handling the material in their own plants.

Producers of Basic also report small sales now and then at from \$21.50 to \$22, in the Valleys, although no large transactions have been recorded.

**Finished Material.**—The demand for Structural Material has been increasing steadily, and the applications on former contracts are constantly heavier than the production of the mills. Some of the Eastern mills have some small quantities which they can ship in comparatively short time, and on sales of this sort the nominal association prices have been entirely lost sight of. Some mills have been on the market during the past week, quoting from 2½c. to 3c. on certain sizes of Beams and Channels, mostly the smaller ones, and have been getting their prices without quibbling on a promise of deliveries within ten days to three weeks. At the same time store quotations have advanced, 2½c. being the minimum, and the maximum being from 3c. to 3½c. Most of the Pittsburgh mills announce that they are entirely out of the market for this year. They are still taking contracts for first quarter delivery of next year, quoting on these the association price of 1.70c., Cleveland. The material is getting noticeably short, even for that far ahead, according to the reports which the mills are permitting to be spread. The jobbers here have been selling plates quite freely during the past week, and now announce that their contracts for the immediate present are about sold up. The material has all been disposed of here of late at 1.80c., Cleveland, an advance of \$2 a ton over the association price, which is being lost sight of. All of the jobbers report that as fast as they get Plates they are being shipped directly to the consumers, no stocks being allowed to collect at any time. The material is getting short because of the scarcity of Billets which is being emphasized. The sales of Sheets have been above expectations, and seem to be increasing a little, although they have not yet reached the point where any fear is expressed that the material will fall short of the demand. The mills are sold up only a comfortable period ahead, and the indications are for a continued healthy market throughout the year. Some few mills, however, might wish for a little better run of orders. The shortage of Sheet Bars has not resulted so far in the discomfiture of any of the mills, and no suspensions have been reported, although such a thing has been expected for some time. It is learned from an authoritative source that importations of Sheet Bars and Structural Shapes will soon be started in sufficient quantities to relieve certain distresses in the local market. Other material will be imported also on a smaller scale. The exact amounts are hard to come at. The demand is much heavier for Black Sheets than for Galvanized. Prices do not change from recent quotations, being as follows: 2.50c. for No. 10 as a basis on the gauges between Nos. 10 and 16, and 3.50c. to 3.60c. for No. 27 as a basis on the gauges between Nos. 17 and 28 for one pass cold rolled, full cold rolled being quoted 10c. extra. This week has brought out quite a demand for Light Rails. Some of the mines, not anticipating such a rush, did not provide themselves with sufficient material with which to make needed extensions. The price on 16-lb. Rails has been forced up to \$39, which is an advance over former quotations, two increases having been ordered during the past week. There has been a slight demand for Steel Rails of the larger sizes, and some of the mills having a slight increase in the capacity have been able to make small sales for July delivery. Regular customers were taken care of by the Steel Corporation at association prices, \$28, while the general market was bidding up. There was also a prospect of an increased capacity on the lighter Plates, but this has not materialized, the first rollings working out defectively. There is also a better demand for Pipe than has heretofore been noted, Black Pipe leading. The prices have not changed from 60 and 67 off list, Pittsburgh, basing discounts for Black Pipe and 48 and 55 off list for Galvanized Pipe.

**Old Material.**—The demand for Scrap this week has been rather sharp, especially for Busheling Scrap for mills. The demand for Foundry Scrap is only moderate. The increased demand has only strengthened the market without changing the prices in the least. The quotations are as follows: No. 1 Wrought, \$19.50 net; Iron

Rails, \$27.50 gross; Iron Axles, \$26 net; Cast Borings, \$10 gross; Wrought Turnings, \$15.25 gross; Cast Scrap, \$15.50 net; Car Wheels, \$19 gross; Heavy Melting Steel, \$19 gross; Old Steel Rails, \$20 gross.

## Birmingham.

BIRMINGHAM, ALA., May 26, 1902.

The past week showed an increase in the demand for Iron and a hardening in values. "The unexpected always happens," and both the volume of the demand and the ready consent of buyers to accept advance in price are surprises to sellers. They are irrefutable evidences that the scarcity of Iron "is no joke." The orders for prompt and nearby delivery continue to be of limited volume, and it is well for buyers that this is so, for orders of importance could not be executed. All that sellers can supply is promptly snapped up, and there is little or no contention as to price. It is as if buyers said, "Give us the Iron—we are bound to have it—and you can fix the price."

The registered sales show that the prevailing price for No. 2 Foundry was \$17.50. Some bids at \$17.25 were promptly turned down, and no sale under \$17.50 was reported. There were sales of No. 3 Foundry at \$16.50, and some No. 4 Foundry was sold at \$16. Gray Forge would bring \$16, but no sales are reported. It is very scarce. Some Silver Gray found purchasers at \$20. The average advance for the week was 50c. per ton, and at the close the market looked higher. For delivery the last half of the year the market was firm on the basis of \$16 for No. 2 Foundry, with very little disposition to sell. And this feeling was epitomized by a leading official in the remark, "We are finding the market so much stronger than we anticipated. It is no trouble to sell Iron even at the stiffened prices." One round lot of 10,000 tons of Gray Forge was reported as sold at \$15 last half of year delivery. But the suspected seller would neither confirm nor deny the sale, and your correspondent is satisfied that the report is correct. The pressure for shipment of defaulted deliveries continues, and it is equally strenuous for recent purchases. While buyers have been urgent after Iron, users of Steel have been equally as clamorous for that. Special quality has been in demand, and with the specifications submitted went a price so tempting that there was nothing to do but accept the orders. But "one swallow don't make a summer," and a little emergency business don't make its cost a quotation of market. Practically the price of Steel is unchanged, with mills trying to even up on old business. There is no trouble to secure business; but turning it out fast enough to satisfy desires of buyers, "Aye, there's the rub!"

The prevailing condition of the market is a great encouragement to those contemplating the erection of new furnaces. All the secrecy possible is being used to conceal intentions, but they are almost open secrets here, and will soon have the veil of secrecy removed altogether. The closing of a deal for 5000 acres of land, covering Red Mountain Iron Ore, by an interest credited with furnace intentions has come to the ears of your correspondent from good sources. The tract is contiguous to Bessemer and the large Coal properties owned by the purchasers. There is only one inference, and that is Bessemer district gets the plant. It is needed.

The Louisville & Nashville Railroad have received at Pensacola the first shipload of their purchase of foreign Rails. On the 27th inst. another cargo of 6000 tons is due, and at intervals of ten days others are to follow until the purchase of 30,000 tons is delivered. This order would have gone to the Steel mill at Ensley if it had been in condition to fill it.

W. P. Pinckard, one of the leading promoters and developers of the district, owns 4000 to 5000 acres of Ore and Coal lands contiguous to Bessemer, on which preparations are being made for their development. A saucer shaped space separates the Coal from the Red Ore of Red Mountain, and the outcrops of the Coal and Ore are all in the rim of the saucer shaped space. The Coal, of which some of the veins are but continuations

of celebrated seams being worked, lies partly horizontal, and the dip, where that prevails, is so gentle and gradual that all the conditions for easy and economical mining are met by "the lay of the land." The seams aggregate 40 feet of Coal, and its value as a coking Coal is shown by the following test of Coke made from it—viz.:

	Per cent.
Moisture .....	0.10
Volatile matter.....	1.45
Fixed carbon.....	91.41
Ash .....	7.04
Total.....	100.00

The sulphur is 0.88. The per cent. volume of cells is 45. Calculation shows over 100,000,000 tons of Coal waiting to be mined. As to the Ore, Mr. Pinckard states that it was from 41 to 55 per cent. metallic Iron, and analyses were furnished of two samples submitted to chemist—viz.:

	Lewis No. 1. Per cent.	Lewis No. 2. Per cent.
Metallic Iron.....	51.70	54.40
Silica .....	16.25	17.10
Alumina .....	4.72	4.37
Lime .....	Trace.	Trace.
Phosphorus .....	0.028	0.074

It is not contended that it will all run this way. In a body of Ore estimated at 25,000,000 tons we all know there must be proportions of good, bad and indifferent. But this showing will serve notice on doubting Thomases that this district will be furnishing Iron to supply the world to remote time. This special property is used only to illustrate the possibilities of this district when the hand of development directs the plow of progress.

There are various reports concerning the efforts of intelligent and practical prospectors who are boring to locate the continuation of the Red Mountain Ore in Shades Valley. But they are sawing wood and saying nothing, while gossip has it that rich finds have been struck. The parties interested are not "shadow chasers," and it is reasonable to say they have good grounds for the faith that is in them. To show that we are making progress in the quality of our Coke product an analysis of a Walker County Coke is submitted—viz.:

	Per cent.
Moisture .....	0.49
Volatile matter.....	0.97
Fixed carbon.....	95.54
Ash .....	3.00
Total.....	100.00

The sulphur is 0.449. This is considered fine.

The most important event here the past week was the application of the Seaboard Air Line to get into this city. Everything asked for was promptly granted, and the privilege is theirs. They will build from Atlanta here, crossing the East & West Line, at an approximate cost of \$5,000,000, and will expend here in terminals, &c., probably \$1,000,000 more. There is a unanimity of feeling pervading all classes as to the value of this road to this city.

What a Coal burning territory it will open up to us, and what a Coal carrier it will be. The promise is given to domicile the road here in one year from date. Among the new incorporations the past week was that of the Drop Forge & Foundry Company, capitalized at \$50,000, of which 20 per cent. has been paid in. They will make drop forges and finished machinery. The Richards Iron Works succeed to the business of Jno. D. Lykes, which they will enlarge.

The Equitable Trading Company, capitalized at \$50,000, were also incorporated. Real estate will be their specialty. A steam heating company were incorporated, a bond of \$10,000 being exacted, and the city to receive 2 per cent. of the profits after a certain period. Then articles were filed for an electric light, heat & power company, and the same were approved. This company will use underground conduits for wires, &c. Scarcely a week passes now that some new enterprise for public land does not knock at the door for admittance. They are all encouraged to enter. So far all have had merit.

The *Maritime News and Review* is the title of a new paper to be published in Baltimore, Md., beginning June 3. It will be issued weekly and will be devoted to shipping and kindred interests on the Atlantic and Gulf coasts.



## Pittsburgh.

(By Telegraph.)

PARK BUILDING, May 28, 1902.

**Pig Iron.**—Report has it that the United States Steel Corporation are negotiating for the purchase of 100,000 tons of Bessemer Iron for next year's delivery. If this deal goes through it is claimed that practically the surplus output of Pig Iron in the two Valleys will be under contract up to April of next year. There have been heavy sales of Bessemer Iron in the past week to other consumers, prices ranging from about \$20.50 to \$21, at furnace, and deliveries in some cases running into March of next year. Bessemer Iron for shipment over next six months would readily bring \$21 or higher at furnace, and it is claimed sales of small lots of Bessemer for prompt delivery have been made at \$21.50 at furnace. It is not a question of price in the Pig Iron market any longer, but where to get the Iron. A moderate amount of Gray Forge is being sold at \$19.75, Pittsburgh. No. 2 Foundry brings \$20.50 to \$21, and higher. The National Association of Blast Furnace Workers and Smelters, which is the name of the organization embracing blast furnace labor, are trying to enlist the aid of the American Federation of Labor in their efforts to get an eight-hour day, but so far without success. It is thought their demands for an eight-hour day will fizzle out. It is said that the United States Steel Corporation have bought about 50,000 tons of Southern Basic Iron at \$15, at furnace, in Birmingham district. The all-rail rate to Pittsburgh is \$4.15, so that this Iron would cost \$19.15 delivered here.

**Steel Billets.**—There does not seem to be the urgent demand that there was some time ago. Prices, however, continue high, and Bessemer Billets, ordinary carbons, are held at \$32 to \$33, Pittsburgh. A sale of a round lot of High Carbon Billets is reported at a price equal to about \$34.25, Pittsburgh. A large tonnage of foreign Billets and Sheet Bars is being offered in this market.

(By Mail.)

The demand of blast furnace labor for an eight-hour day, which was to have gone into effect on June 1, will not be enforced, but will be postponed until July 1 and probably will be abandoned altogether. The men have not organized in the Valleys or Pittsburgh and are not prepared to make a bold stand for their demand. On the other hand, the blast furnace operators are a unit in refusing this demand for an eight-hour day and will not even grant the men a conference. It is not expected that a single blast furnace in the Valleys or Pittsburgh will be closed on June 1 because of labor troubles. The Pig Iron market continues exceedingly strong and the scarcity of metal is becoming greater almost every day. Heavy sales of Bessemer Pig have been made in the past week and negotiations are pending looking to the sale of 100,000 tons to the United States Steel Corporation. If this goes through, practically all the available Bessemer Iron for shipment up to April, 1903, will be under contract. It is known that a good many consumers, notably foundries that use Malleable Bessemer, have not covered, and these concerns and others may be in distress for metal before this year is out. Very little Steel is changing hands, consumers being pretty well covered, but some Foreign Billets and Sheet Bars are being sold for delivery in this district. Demand for Finished Iron and Steel has shown quite a falling off recently, with the exception of Plates and Structural Material. This is due to the fact that large consumers are pretty well covered and are out of the market, but are specifying liberally on their contracts. An event of this week is the sale of about 20,000 tons of German Ferromanganese, most of it for delivery in the Pittsburgh district.

**Muck Bar.**—There is a very heavy demand for Muck Bar and it is exceedingly scarce. The best grades are held at \$35.50 to \$36, delivered Pittsburgh. Sales of 3000 to 4000 tons are reported at this price.

**Rails.**—The contract for 30,000 tons of Rails for the Cotton Belt route was taken by a local mill for delivery in last quarter of this year. A good deal of tonnage is

pending, but it is probable most of the orders that will be placed in the next two or three months will not be rolled until 1903. We quote at \$28, at mill, and it is said that Rails for rerolling have been sold at this price or higher.

**Ferromanganese.**—Within the past week or so fully 20,000 tons of German Ferromanganese have been sold for shipment in the Pittsburgh district at \$49, delivered. One leading Steel interest bought 10,000 tons, another 5000 and a third about the same amount. The Carnegie Steel Company, the only local producer of Ferro, have been out of the market as a seller for some months. No domestic is being offered in this market.

**Plates.**—While the official price on Plates is 1.60c., Pittsburgh, yet a good deal of business that is being placed is at 1.70c. to 1.80c. and higher. Two or three of the leading Plate mills are filled up for the four to six months and are out of the market as sellers. Other mills that can make reasonably prompt deliveries of Plates have no difficulty in getting 1.80c. or higher. A meeting of the Plate Association will be held on June 5. Official prices are as follows: Tank Plate,  $\frac{1}{4}$  inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days. As noted above, the actual price on Tank Plate,  $\frac{1}{4}$ -inch and heavier, is 1.80c. and higher, f.o.b. at mill, while small lots from store bring about 2c.

**Spelter.**—We continue to note a good demand for Spelter and a leading Sheet interest have recently placed a large contract. We quote prime Western Spelter at 4.27 $\frac{1}{2}$ c. to 4.30c., Pittsburgh.

**Structural Material.**—Some good sized sales of foreign Structural Material are being made, domestic mills being unable to supply the enormously heavy demand. Some large jobs involving heavy tonnage have recently been placed, and the mills have entered very heavy orders for 1903 delivery. There is no trouble in getting 2 $\frac{1}{2}$ c. to 3c. a lb. for Beams, Channels and other Shapes for prompt delivery. Official prices are as follows: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

**Sheets.**—Demand for Sheets is not as active as it was some time ago, but the mills are pretty comfortably filled for the next two or three months. Two or three of the Sheet mills of the leading interest will be closed soon for extensive repairs and improvements. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, for desirable orders, at 2.95c. to 3c., and No. 28 at 3.05c. to 3.10c. Small lots from store bring 3.15c. to 3.25c. for No. 28 Galvanized Sheets are somewhat quiet in demand, but the mills are pretty well filled up on old contracts. We quote at 70, 10 and 5 in carloads and 70 and 5 in small lots from store. All above prices are f.o.b. maker's mill.

**Bars.**—The heavy tonnage was largely placed some time ago, but a moderate amount of new business is being taken by the mills. Official prices of Iron Bars are \$4 a ton higher than for Steel Bars and demand for the former is not as active as it has been. We quote Steel Bars at 1.60c., half extras, for carloads and larger lots, while small lots bring 1.70c. to 1.75c. All specifications for less than 2000 lbs. of a size are subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra. The total weight of a size to determine the extra, regardless of length. We quote Iron Bars at 1.80c., Pittsburgh, extras as per National Bar Iron Card.

**Merchant Steel.**—The mills are full of work, and it

is said some consumers who have not yet covered may have difficulty in getting their contracts placed when they come into the market. Prices of Open Hearth Spring Steel have advanced. We quote: Open Hearth, 2.40c. to 2.60c.; Toe Calk, 2.10c. to 2.15c.; Tire Steel, 1.90c. to 2c.; Cold Rolled and Cold Drawn Shafting, 50 per cent. off in carloads and 45 per cent. in less than carloads in basing territory; Tool Steel, 6½c. to 7c. for ordinary grades, and 12c. and upward for special grades, all f.o.b. mill.

**Boiler Tubes.**—There is a fairly heavy demand, and the mills have plenty of work on their books for the next two or three months. Discounts for small lots are as follows:

Steel.	Boiler Tubes.	Up to 22 feet. Per cent.
1 to 1½ inch, inclusive.....		45
2¾ inch to 5 inch, inclusive.....		63½
1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive..		58
Iron.		
1 inch to 1½ inch and 2½ inch.....		39
1¾ inch to 2¼ inch.....		38
2¾ inch to 13 inch.....		48

The mills quote lower prices than the above to the jobbing trade for large lots.

**Skelp.**—Demand for Skelp is dull, some of the leading consumers being out of the market as buyers. We quote Grooved Iron at 2.22c. to 2.25c., and Sheared Iron Skelp at 2.25c.; Grooved Steel Skelp is held at about 2.25c. at mill, and we note a sale of 2000 tons at this price. All these prices are f.o.b. maker's mill, terms net 30 days.

**Merchant Pipe.**—There is a good demand for Pipe and the tone of the market is strong. Three or four large Pipe mills under erection for some months are nearly finished and will soon be started up. Pittsburgh basing discounts for carloads are as follows:

Merchant Pipe.	Black. Per cent.	Galvd. Per cent.
¾ to 1½ inch, inclusive.....	60	48
¾ to 12 inch, inclusive.....	67	55

**Coke.**—The *Courier* reports that the output of Coke in the Connellsville region last week was the heaviest for some months, having been 246,701 tons, an increase over the previous week of nearly 25,000 tons. Demand is heavy, and the Coke trade is in better shape than for a long time. The anthracite coal strike has helped the demand and Furnace Coke for prompt shipment would probably command \$3 a ton. The car supply for Coke for shipment west of Pittsburgh is very good, but is not so good for Eastern shipment. Connellsville Furnace Coke on contracts is \$2.25 to \$2.50 a ton, a good many large consumers having covered for balance of the year at the lower price. Seventy-two hour Connellsville Foundry Coke is held at \$2.75 to \$3 a ton.

**Iron and Steel Scrap.**—Prices on Scrap continue to advance, and No. 1 Railroad Wrought has sold at \$21.50 to \$22 in net tons. Heavy Melting Stock for Bessemer and Open Hearth practice, \$21 to \$22, gross ton; Car Wheels, \$18.50 to \$19, gross ton; Steel Rails for rerolling, \$26 to \$28, gross ton, and Old Iron Rails, which are very scarce, \$24 to \$25, in gross tons.

## New York.

NEW YORK, May 28, 1902.

**Pig Iron.**—A sharp demand exists for prompt delivery, because of delayed shipments from furnaces whose output has been cut down by the scarcity of fuel owing to the miners' strike. Practically nothing is available for such delivery, and therefore in spite of an active inquiry the market is quiet. Consumers are not placing orders to any extent for delivery late in the year, as they are hopeful that when they need Iron they will be able to secure it from Southern furnaces if not from Northern makers. Considerable Iron can be obtained from Southern furnace companies for delivery during the last quarter of the year. Prices are very firm, with an upward tendency, because of the sharp demand for early delivery. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, \$21.50 to \$22; No. 2 X, \$20.50 to \$20.65; No. 2 Plain, \$20 to \$20.65. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, \$20.50 to \$21; No. 2 Foundry, \$19.25 to \$19.75; No. 3 Foundry, \$18.25 to \$18.50.

**Cast Iron Pipe.**—The volume of inquiries is large, although not including any quantities of special moment. Evidently a great deal of Pipe is needed by all classes of buyers. The situation is aggravating, because so much business is offered that the Pipe foundries are unable to take. They are hampered by the scarcity of Pig Iron, especially those who depend on Eastern furnaces for their supply. Prices are very strong, premiums being easily obtained on anything to be had for early delivery.

**Finished Iron and Steel.**—Activity is particularly noted in the demand for Structural Material. The leading bridge company have booked an unusually heavy tonnage this month made up almost entirely of small orders. The fact is noted that over 50 per cent. of the structural work now being figured on results in business. The trade is continually annoyed by scarcity of material, the mills making slow deliveries on contract. We quote at tidewater as follows: Beams, Channels and Zees, 2c. to 2.25c.; Angles, 1.95c. to 2.25c.; Tees, 1.95c. to 2.25c.; Bulb Angles and Deck Beams, 2.10c. to 2.25c.; Sheared Steel Plates are 1.95c. to 2c. for Tank, 2c. to 2.15c. for Flange, 2.15c. to 2.25c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.80c. to 1.85c.

## Metal Market.

NEW YORK, May 28, 1902.

**Pig Tin.**—A quiet market prevailed here throughout the entire week. The fluctuations were very slight and values held about the same position as a week ago. Business was light. There were sales of spot yesterday at 30c. and 30.10c. To-day the market closed as follows: Spot and May, 29¾c. and 30¼c.; June 29.70c. to 30c. The London market experienced considerable reaction, yesterday's prices being £1 lower than the quotations of last week. The closing prices to-day were as follows: £135 15s. for spot and £132 10s. futures. Arrivals thus far this month have been rather light, amounting to 2647 tons.

**Copper.**—The manipulation of this article continues in the hands of the interests concerned in the floatation of the new company, as previously stated. On Monday the market was bid up to 12.75c. for Lake and 12¾c. for Electrolytic. The support was withdrawn somewhat yesterday and the market showed a distinct weakness, with lower prices. Copper was offered in large quantities at prices ranging from ½c. to ¼c. lower than the figures of the day previous. To-days' quotations are: Standard, spot and May, 11.90c.; June to September, 11.65c. to 11.90c.; Lake, 12¾c. to 12¾c.; Electrolytic, 12¼c. to 12.35c. The London market was very steady throughout the early portion of the week at £55. Yesterday it reacted to £54 15s., and it closed to-day as follows: £53 17s. 6d., spot and future; Best Selected, £58. The exports during the week were somewhat better than expected and bring the total for the month thus far up to 13,000 tons.

**Pig Lead.**—The market is without change. The Smelting & Refining Company quote Desilverized, New York, on a basis of 4.12½c., spot, and 4.10c., 15 days. The London market closed to-day at £11 7s. 6d.

**Spelter.**—There is a scarcity of spot here, and prices have run up to 4.75c., while prompt shipments from the West are difficult to obtain. Yesterday a lot of 150 tons of Silesia arrived from Germany. The St. Louis market is unsettled, and spot is quoted 4.50c. The London market closed at £18 7s. 6d.

**Antimony.**—Is unchanged. Hallett's is quoted 8c. to 8¼c.; Cookson's, 10¼c., and outside brands, 7½c.

**Nickel.**—The situation is unchanged. Ton lots are quoted at 50c.

**Quicksilver.**—Prices are on a basis of \$48 per flask of 76½ lbs. in lots of 56 flasks or more.

**Tin Plates.**—The market is unchanged. The American Tin Plate Company are quoting for delivery until October 1 on a basis of \$4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or \$4, f.o.b. Pittsburgh district.



### New Rules, Copper Committee New York Metal Exchange.

The following ruling was established on May 27 by the Copper Committee of the New York Metal Exchange:

"All future applications for the listing of brands of Copper, a sample piece duly branded must be deposited with the secretary of the exchange, he to have the same analyzed by a duly appointed assayer and the piece to be kept in the custody of the secretary for future reference. The applicant shall pay the expense of such assaying. The applicant shall also pay a listing fee of \$100, the same to be returned should the application not be granted."

The Copper Committee consists of Jesse Lewisohn, B. Hochschild and L. Nachmann.

### Iron and Industrial Stocks.

Fluctuations in the prices of industrial stocks were quite narrow during the week except on Pressed Steel Car, which made quite a spurt, the common particularly. It made a gain of over \$6, from \$44½ to \$50¼, subsequently losing a part of it. American Car & Foundry sympathized to some extent.

The Safety Car Heating & Lighting Company, "Pintsch Light," report for the year ended March 31, 1902: Safety Company received for equipment, total gross income, \$557,482; expenditures, \$118,857; net income, \$438,625. Pintsch Company, gross income, \$398,077; expenditures, \$92,580; net income, \$305,497. Total net income both companies, \$744,122; less dividends Safety Company, 11 per cent., \$507,762; less dividends Pintsch Company, preferred 6 per cent., \$18,000; balance surplus, \$218,360.

The Tennessee Coal, Iron & Railroad Company report earnings for the quarter ended March 31 as follows: Gross earnings, \$557,920; rents and miscellaneous profits, \$21,095; total profits, \$579,015; other income, \$376; total income, \$579,391; fixed charges, covering interest on bonded and other debts, and interest and dividends on guaranteed securities, \$211,031; net earnings, \$368,361; depreciation, \$118,333; quarterly dividend, 2 per cent. on preferred stock, \$4966; total, \$123,299; balance carried to surplus account, \$245,061.

Accompanying the checks for dividend No. 13 on Pressed Steel Car Company of Pittsburgh preferred stock sent out last week is a statement of operations for the quarter ended March 31, 1902. It shows net earnings of \$1,025,118.38. After deducting \$59,841.65 for interest on bonds, \$218,750 for the quarter's dividend on the preferred stock and \$67,007.89 for reserve for depreciation of plant, there remained a surplus for the first three months of 1902 of \$679,518.84.

It is said that the number of stockholders in the United States Steel Corporation now approximates 43,000, an increase of 33 1-3 per cent. during the past year.

**Dividends.**—The directors of the Republic Iron & Steel Company have declared the regular quarterly dividend of 1¾ per cent. upon the preferred stock, payable July 1.

The directors of the Alabama Consolidated Coal & Iron Company have declared the regular quarterly dividend of 1¾ per cent. on the preferred stock. The net earnings for the quarter after deducting depreciation, interest, &c., were \$90,968.

At the recent convention of the Amalgamated Association, held in Wheeling, W. Va., it was decided to enforce the eight-hour day on all finishing mills that have improvements that enable them to be kept in continuous operation throughout the 24 hours of the day. This was embodied in a resolution adopted at the convention and which is as follows: "All 10-inch guide and hoop mills with one furnace averaging \$35 per turn or more, or with two furnaces \$65 per turn or more on a nine and one-quarter hour system, based on a 1 cent eard rate, the eight-hour system shall be adopted. On bar and 12-inch mills averaging 60,000 pounds on one furnace and 85,000 pounds on two furnaces per turn on the nine and one-quarter hour system, the eight-hour system shall be adopted."

### Central Pennsylvania Industrial News.

HARRISBURG, PA., May 27, 1902.—Labor troubles and the scarcity of coal are vexing the iron and steel trade in this part of the State and there are no prospects that conditions will be improved before June 1, if then. The men in several of the iron towns have assumed attitudes which do not permit of negotiation, and in one instance a company have issued notice that men who had struck could not consider themselves in the employ of that establishment any longer. On top of this came an order to the Amalgamated men to strike and a few more men are idle. Reading, Columbia and Lebanon are the chief towns in which there are strikes, and the mills have been doing little or nothing for the greater part of the month. This city and York have been comparatively free from troubles, and prospects are good for a continuance of the times, which are the best known hereabout in years.

The anthracite strike has caused suspension of some mills and furnaces in the Schuylkill, Lebanon and Lehigh Valleys, and if it lasts until June more will have to stop. The Philadelphia & Reading Coal & Iron Company have curtailed work in some of their shops and other roads engaged in the coal trade will follow suit. These conditions cannot fail to have bad results for the men, and some in the allied trades are wishing that the strike was over.

Bird Coleman Furnace No. 1, near Lebanon, has been blown out for repairs and it is stated that the Lackawanna Company will improve it.

Vesta Furnace of the Susquehanna Iron & Steel Company at Watts, Lancaster County, is shortly to be blown in. Improvements will be made in the casting house and the water supply. J. M. Denny is furnace superintendent. At the neighboring town of Marietta the Susquehanna Casting Company will enlarge their plant.

Last week the transfer of the Lebanon Valley Furnace at Lebanon, operated for many years by J. & R. Meily, was made to the new Lebanon Valley Furnace Company, and General Grubb also sold to the new corporation the interest he had in the Cornwall ore hills. The price for the furnace is said to have been \$112,500, an equal amount being paid for the ore rights. The stack will be operated regularly. Among those in the new company are Richard Meily, E. B. Grubb, V. F. Grubb and James and George Meily.

The Harrisburg Foundry & Machine Works have secured a number of engine orders lately, among them being one 700 horse-power for the Friend Paper & Tablet Company, West Carrollton, Ohio; one 400 horse-power for the United Railroad & Electric Company of Baltimore; a small one for Japan; one 450 horse-power for the new mill of the Susquehanna Silk Company of Sunbury, at Marion, Ohio; one 350 horse-power for the mines of the Colonial Coal & Coke Company at Dorchester, Va.; the electrical engine equipment for the new Hotel Somerset at Boston, and plants for the hotel at Virginia Hot Springs, the Grand Canal, near New Orleans, and other places in the South. The Baltimore order is the ninth received in seven years by the works from the same company.

The Crucible Steel Company have secured new limestone quarries in the Altoona region. Larger shipments than ever known are being made from the Altoona region by the steel and iron companies controlling the deposits in that rich limestone section.

The Conewago Furnace property at Middletown, Dauphin County, has been sold to Nissley & Peters of that place, and the tract will be used for building purposes when all buildings are removed. The stack, which had been idle for years, was dismantled some time ago. It was the last of the furnaces which made Middletown noted before the Civil War, the Cameron Furnace having been torn away early in the nineties.

John Philip Miller, a pioneer builder of water works in the Northwest, died on the 21st inst. at his home in Chicago. He became a resident of that city in 1871, and immediately after the great fire started in business, contracting for the construction of water works.

### The Stationary Engineers' Convention.

The National Association of Stationary Engineers will this year hold its twenty-first annual convention in Boston, September 1 to 6 inclusive, in the buildings of the Massachusetts Institute of Technology. It is intended to make this convention the most interesting in the history of the association. Every effort will be made by the committee in charge to increase the number and quality of exhibits and to enhance the general features of the gathering. A committee known as the Executive Committee of the Supply Men's Association of the United States has been formed, which will take charge of the financial and exhibit departments of the convention, as follows:

Chas. A. G. Winther, chairman, Chapman Valve Mfg. Company, Indian Orchard, Mass.; Arthur W. Chesterton, treasurer, A. W. Chesterton & Co., 64 India street, Boston; Albert C. Ashton, the Ashton Valve Company, 271 Franklin street, Boston; Robert Pirle, Crosby Steam Gage & Valve Company, 93 Oliver street, Boston; John D. Stiles, Jenkins Brothers, 17 Pearl street, Boston; Geo. W. Knowlton, G. W. Knowlton Rubber Company, 72 Broad street, Boston; William W. Beal, secretary, the Mason Regulator Company, 158 Summer street, Boston.

This Executive Committee will make a general appeal to all the leading firms in the United States connected with the engineering trade, soliciting a uniform contribution of not less than \$25 from each concern; and should this appeal be liberally met any surplus funds will be promptly rebated to the contributors *pro rata*. Under this arrangement each contributor will be allotted suitable space to exhibit goods in the exhibition hall if desired, and no charge will be made for such space. Headquarters will be at the Hotel Brunswick, Boylston street, Boston, which is located directly opposite the Massachusetts Institute of Technology. Special rates have been made for both engineers and supply men in attendance at the convention.

### Proposed Consolidation of Lead Pipe Manufacturers.

The reports current for some weeks past in regard to a projected consolidation of the various manufacturers of sheet lead, lead pipe and other manufactured lead products have become more circumstantial during the past week. It is claimed in some quarters that the project has advanced substantially and that 10 or 12 concerns engaged in this branch of manufacture are likely to become merged into a corporation with a capital of \$15,000,000, which new company are likely to be in shape for incorporation under the laws of New Jersey at an early date. Inquiry in the trade elicits the fact, however, that several of the leading concerns engaged in the manufacture of lead products apart from white lead are unlikely to enter into a combination of this kind. Moreover, it is rumored that important lead pipe interests in the West, who are said not to have been considered by the promoters of the consolidation, have announced their intention of invading the Eastern market should the consolidation be formed. These interests, it is thought, would prove too strong competitors to enable a consolidation of the Eastern manufactured lead interests to be successful, especially if some of the larger manufacturers in the East are not parties thereto. Under these conditions the success of the efforts for a consolidation are regarded in the trade as decidedly problematical. The announcement of the practical consummation of the scheme, which appeared in some of the New York papers, is regarded as decidedly premature. It is quite likely that the whole project may fall through again, as it has done more than once in the past.

### Consolidation of Ordnance and Projectile Makers.—

The American Machine & Ordnance Company, recently incorporated with a capital stock of \$10,000,000, divided into \$2,000,000 6 per cent. cumulative preferred stock and \$8,000,000 common stock, are a consolidation of the American Ordnance Company of Bridgeport, Conn., and several other gun and projectile concerns. The new

company control the United States patents for the Hotchkiss rapid fire gun, the Driggs-Schroeder system of rapid fire guns, the Accles machine gun, the patent process of electric welding in the manufacture of projectiles now used in both the army and navy, the Fletcher and Dashiell patents of rapid fire breach mechanism and the Maxim patents. They have also acquired a complete modern plant for the making of patterns and fine machinery. A short time ago Joseph H. Hoadley, president of the International Power Company, New York City, announced that he had obtained control of both the American Ordnance Company and the Driggs-Seabury Gun Company of New York City, and that the two were to be merged into one company.

### The New York Machinery Market.

NEW YORK, May 28, 1902.

During the last week general activity characterized the engine and boiler trade. Several very good propositions were closed, and the inquiry brought forth new projects, which are said to be very interesting. Of the contracts placed in this line two are important from more than one standpoint. They will give practical tests on a large scale to steam superheating apparatus, and one of the plants, if the reports are true, will bring out another type of American steam turbine. The demand seems, however, to have run mainly for large units, and in some quarters of the engine trade it is reported that orders for smaller sizes have fallen off somewhat. Prices are unchanged. On water tube boilers the market is considerably firmer than it has been for some time. While no specific advances are named, the prices quoted are being firmly adhered to. In the machine tool and supply trade there is little of more than commonplace interest. Prices are strong and unchanged. Deliveries are easing up slightly on the smaller sizes of ordinary tools.

The Chicago Edison Company have awarded the boiler order in connection with their new plant to the Babcock & Wilcox Company. It calls for 6000 horse-power. The order also called for superheaters and stokers. This is said to be but an initial order, as the plant is to be developed into a very extensive one. It is said by parties in the trade who have followed the project very closely that steam turbines are to be used and that they will be furnished by the General Electric Company, who, it is known, have been experimenting for a long while with this class of machinery. It is also reported that the large boiler order which the General Electric Company placed recently was on account of an extensive turbine plant which the company will install and operate at Schenectady. Another extensive boiler order which has just been placed is reported to have gone to the Babcock & Wilcox Company. It called for 2500 horse-power of water tube boilers and was placed by the Twin City Rapid Transit Company of Minneapolis. This plant is also to be equipped with superheaters.

The engine contract in connection with the large extensions of the Newark power station of the North Jersey Traction Company was awarded last week. It went to Woolston & Brew, who will furnish Brown Corliss engines built by the New Brown Corliss Engine Company of Milwaukee. The order calls for four 2500 horse-power cross compound condensing units. The other equipment for this station has not been ordered as yet. The principal offices of the company are at Jersey City.

The New York Edison Company have decided to install vacuum feed water heaters at their Waterside station, and have placed an order with Charles H. Paine, New York representative of the Taunton Locomotive & Mfg. Company, for ten 6000 horse-power units of Walnwright-Evan flow heaters. The original plans called for atmospheric heaters only, and the order for this equipment was awarded at the time to the Taunton Company through Mr. Paine.

Contracts are being awarded by Westinghouse, Church, Kerr & Co. of 26 Cortlandt street for additional equipment for the new Third Avenue Electric Power Station, which is now being completed. It is stated in the trade that the Robins Conveying Belt Company of



Park Row Building had been awarded the contract for the coal and ash handling and conveying machinery.

The Goshen Light & Power Company, Goshen, N. Y., will erect a new boiler house, in which will be installed a 150 horse-power boiler. It is the intention of the company to enlarge the main building shortly to accommodate two new dynamos and other electrical machinery.

Considerable attention has been paid of late to the proposed plant of the Boston & Northern Street Railway Company at Danversport, Mass. We are advised by C. F. Bencupt, the company's electrical engineer, that the construction of this plant has been postponed for two years. The principal offices of the company are at 14 Kilby street, Boston.

The Alberger Condenser Company of 95 Liberty street have recently received an order for an important condensing equipment to be installed in the steam turbine testing room of the new shops of the Westinghouse Machine Company at East Pittsburgh. This apparatus consists of an 8000 square foot surface condenser of the Alberger high vacuum type, a Corliss two-stage dry vacuum pump and a centrifugal circulating pump connected to a Westinghouse engine. Owing to the high vacuum desired in steam turbine practice this condensing outfit is to maintain 28 inches of vacuum.

H. B. Magor of 29 Broadway is the purchasing agent for the Havana Sewerage Construction Company, who are to complete the Havana sewerage system. We are informed that this work will now be pushed vigorously. No purchases of mechanical equipment have been made as yet. Basil Magor, consulting engineer, 29 Broadway, stated to a representative of *The Iron Age* that specifications would not be ready for some time.

The Standard Construction Corporation, Limited, of Amberley House, Norfolk street, London, W. C., who are constructing an extensive railway system in Norway, are now purchasing their machinery to be used in building the road. As the route traverses considerable mountainous territory a great deal of rock drilling machinery will be required. An order for a large amount of this class of equipment has just been awarded to the Ingersoll-Sergent Rock Drill Company of New York and Easton, Pa. An extensive order for hoisting machinery has also been awarded. The Lidgerwood Mfg. Company obtained this contract. Herschel Roberts, formerly Deputy State Engineer of New York, and former State Engineer Adams of New York are the leading spirits in the construction of the work. While they are in Norway a large portion of the time, their headquarters are in London.

The Rapid Transit Construction Company, Park Row Building, have awarded the contract for the cranes to be employed in the new power station. The order calls for one 50-ton and one 25-ton electric traveler and was awarded to the Shaw Electric Crane Company. Specifications have just been issued by Mechanical Engineer John Van Vleck for the coal and ash handling apparatus to be installed in the new power station.

The bulk of the machine tools included in the list which the Lackawanna Railroad have had out for some time has been ordered. The lion's share of the order was awarded to the Niles-Bement-Pond Company and called for heavy types of tools. The entire list amounted to about \$40,000.

Specifications are now being prepared for the equipment of a large new foundry to be added to the works of R. Hoe & Co., 504 Grand street, New York. The new building is to be located on the corner of Broome and Columbia streets. It will be six stories high, 100 x 100 feet. The plans are being prepared by the company's engineering force.

As soon as a proper location can be decided upon the United States Radiator Company of Dunkirk, N. Y., will erect a new plant. It is to be as large as the present works, which are now producing about 2400 carloads of radiators annually. Plans are practically completed so that work can be commenced as soon as a suitable site is secured.

The Regent Automobile & Machine Company, recently incorporated in New York with a capital stock of \$50,000, have just issued a prospectus which states that

considerable is contemplated in the way of adding to their present plant. Their present works are located on St. Mark's avenue, near Bedford avenue, Brooklyn. George W. Bartholf, 12 Clinton street, Brooklyn, is the treasurer of the company.

There is to be an auction sale of the machinery equipment of the Paterson Iron & Steel Company, at Paterson, N. J., on Tuesday, June 3. The list of machinery and tools to be disposed of includes steam hammers of 1000, 4000, 4500, 5000, 10,000 and 20,000 pounds capacity, large lathes, planers, drills, slotters, alligator and plate shears, engines, boiler, pumps and a large assortment of hammer tools, &c., of various sizes. Catalogues are now being sent out.

J. W. Duntley, president of the Chicago Pneumatic Tool Company, who has just returned from a trip through Europe, secured orders for an aggregate of 2700 Boyer and Little Giant pneumatic tools, as well as for 25 Franklin air compressors.

The report which has been current in the trade to the effect that the Empire Portland Cement Company of Warners, N. Y., are to reconstruct their plant is confirmed. E. H. Kingshiny, assistant manager of the company, informed a representative of *The Iron Age* that engineers are now at work drawing the plans for a plant to be built of steel and brick, and as near fire proof as possible. The plant is to be equipped with the latest improved machinery and will be one of the most modern and efficient in this country.

The York Mfg. Company, York, Pa., have been awarded contracts for two 75-ton refrigerating machines and outfit for the Warwick Brewing Company, Newport News, Va.; 65-ton refrigerating machine for Swift & Co., at New York City, and a complete 25-ton refrigerating plant for A. G. Enock & Son, London, England.

Through their New Orleans office the Rockwell Engineering Company have closed contracts to equip the new refinery of the J. M. Guffey Petroleum Company at Port Arthur, Texas, with their oil burning appliances. This is the largest order yet placed in the South for oil equipments. It comprises three of the company's largest pumping systems and 150 burners.

The following bids were received at the Navy Department for machinery:

#### Pensacola, Fla.

- Bidder 1. Drew Machinery Agency, Manchester, N. Y.
  2. Montgomery & Co., 105 Fulton street, New York City.
  3. Arthur J. Lockwood, 12 Platt street, New York City.
  4. Harrison, Gottfried & Hunter, Centre street, New York City.
  5. R. W. Geldart, 56 Beaver street, New York City.
  6. Manning, Maxwell & Moore, 85 Liberty street, New York City.
  7. William Sellers & Co., 16 Hamilton street, Philadelphia, Pa.
  8. Prentiss Tool & Supply Company, 115 Liberty street, New York City.
  9. Railroad Supply Company, Bedford Building, Chicago, Ill.
  10. E. J. Etting, Land Title Building, Philadelphia, Pa.
  11. The Bentel & Bargadante Company, Hamilton, Ohio.
  12. Philadelphia Pneumatic Tool Company, 1058 Ridge avenue, Philadelphia, Pa.
  13. Pratt & Whitney Company, 1 Flower street, Hartford, Conn.
  14. Edw. A. Temple, 100 William street, New York City.
  15. Smith-Courtney Company, Richmond, Va.
  16. Jas. J. McCabe, 14 Dey street, New York City.
  17. Stillwell, Bierce & Smith-Vale Company, 315 Equitable Building, Baltimore, Md.
  18. Hill, Clarke & Co., Boston, Mass.
  19. M. T. Davidson, Brooklyn, N. Y., informal; no guarantee.
  20. J. E. Ogden Company, 147 Cedar street, New York City.
  21. Warren Steam Pump Company, Warren, Mass.
  22. U. Baird Machinery Company, Pittsburgh, Pa.
  23. Francis Harral, 85 Chambers Street, New York City.
  24. Niles Tool Works Company, Hamilton, Ohio.
  25. J. B. Kendall, Washington, D. C.
  26. Miller, Thornberg & Co., 135 Broadway, New York City.
- Class 1. One horizontal boring machine—Bidder 11, \$960; 15, \$1099.98.
- Class 2. One brass lathe—Bidder 22, \$773.95; 15, \$794.95; 18, \$979.
- Class 3. One planing machine—Bidder 8, \$4250; 16, \$4660; 18, \$4689; 7, \$4785; 15, \$4789; 22, \$4885; 6, \$5000; 24, \$5075.
- Class 4. One automatic gear cutting machine—Bidder 6, \$3025.
- Class 5. One duplex pump—Bidder 21, \$90; 26, \$96.50; 1, \$99; 17, \$102.50; 15, \$125.75.
- Class 6. One 2-spindle centering machine—Bidder 18, \$114; 1, \$118.75; 15, \$135; 13, \$153.
- Class 7. Milling cutters—Bidder 18, \$393.17; 23, \$401.83; 2, \$414.29; 22, \$428.89; 4, \$494.36; 25, \$575.
- Class 8. Cast iron surface plates, lathe mandrels, &c.—Bidder 2, \$432.60; 22, \$467.82; 5, \$592.44.
- Class 9. Machinery steel—Bidder 5, \$857.89; 3, \$1109.86; 25, \$1265.20; 14, \$1342.48.

Class 10. Slitting saws, &c.—Bidder 2, \$69.36; 25, \$75; 4, \$75.50; 23, \$77.14.

Class 11. Clipping and caulking hammers, riveting hammers, 1 pneumatic drill—Bidder 9, \$625; 20, \$630.25; 12, \$700; 26, \$836.85; 22, \$841.50; 24, \$854.50; 10, \$863.25; 1, \$883.50; 18, \$1146.25.

#### Frenchman's Bay.

- Bidder 1. Drew Machinery Agency, Manchester, N. H.  
 2. Chandler & Farquhar, 30 Federal street, Boston, Mass.  
 3. Manhattan Supply Company, 160 Duane street, New York City.  
 4. Manning, Maxwell & Moore, 85 Liberty street, New York City.  
 5. Montgomery & Co., 105 Fulton street, New York City.  
 6. Niles Tool Works Company, Hamilton, Ohio.  
 7. F. T. Witte Hardware Company, 106 Chambers street, New York City.  
 8. Prentiss Tool & Supply Company, 115 Liberty street, New York City.  
 9. Hill, Clarke & Co., Boston, Mass.  
 10. Pratt & Whitney Company, Hartford, Conn.  
 11. Fox Bros. & Co., 24 Vesey street, New York City.  
 12. James J. McCabe, 14 Dey street, New York City.  
 13. John B. Roache, 350 Fulton street, Brooklyn, N. Y.
- Class 1. One screw cutting lathe, 14-inch—Bidder 11, \$247.59; 9, \$266; 8, \$281; 6, \$285; 12, \$290; 2, \$316.72; 1, \$335; 4, \$328 and \$350; 10, \$399.50.
- Class 2. One 15-inch pillar shaper—Bidder 2, \$300; 6, \$280 and \$325; 12, \$305; 9, \$329; 11, \$339; 10, \$420; 4, \$418 and \$469.
- Class 3. One 24-inch vertical drill press—Bidder 9, \$154; 6, \$160; 4, \$160 and \$345; 11, \$168; 2, \$190; 8, \$174; 12, \$205; 1, \$231.
- Class 4. Small tools—Bidder 5, \$242.86; 11, \$253.78; 14, \$268.20; 3, \$279.34; 7, \$238.14; 2, \$320.10; 13, \$434.16.

### The Cleveland Machinery Market.

CLEVELAND, OHIO, May 26, 1902.

Local machinery dealers say that May has been one of the best months in their history. A number of the building operations which have been going on this spring seem to have crystallized into machinery business this month. While the aggregate business has been most satisfactory it appears that the orders for tools have been well split up, few of the dealers being able to report sales of more than three or four tools at a time. Prices seem to be advancing all along the line, each of the dealers stating that one or two of their principals have announced advances of from 5 to 10 per cent. There are no labor troubles at present to mar the local situation, and local manufacturers seem to feel that the coming summer will be an unusually prosperous one. There are more new factories on the tapis at present than there have been for many months, and the only retarding influence is the delay in the receipts of building material.

One of the largest lots of machinery purchased in this vicinity in some time was that of the Pennsylvania Railroad Company, who are erecting large repair shops at Columbus. Out of this order the local branch of the Marshall & Huschart Machinery Company will furnish three Bickford radial drills, three Cincinnati universal milling machines and a large boring mill. These people report that the present month has been by far the best since the store was opened. Orders for single tools have been very numerous, and they closed several good contracts in addition to the above.

The Garrett-Cromwell Engineering Company, consulting engineers, say there is an immense amount of very large work in sight and they have just closed contracts for the engineering work on several important plants. For the Alabama Steel & Wire Company they will build a basic open hearth plant consisting of six 50-ton furnaces and a 36-inch blooming mill capable of converting the furnace product into 4-inch billets to supply the present rod mill. They will shortly close contracts for power house, water works, rolling mill and other necessary equipment. They have the contract to build two 25-ton open hearth furnaces for the C. Pardee Works of Perth Amboy, N. J., and they also have the contract for the new 350-ton blast furnace to be erected for the Detroit Iron & Steel Company of Detroit, which project has been previously mentioned in these columns. They have under consideration important improvements to the plant of the Colorado Fuel & Iron Company in addition to those which are already under way.

The National Electric Lamp Company have executed a mortgage for \$100,000 on the plant of the Brush Elec-

tric Company, which they have just purchased, and the money will be expended in making important improvements. New buildings will be erected and considerable new machinery added for the production of electric lamps.

The Parish & Bingham Company, manufacturers of sheet metal stampings, have broken ground for their new addition. It will be 80 x 90 feet, two stories high. Two additional stories will be erected on the present building, which is 50 x 300 feet. They will install a number of presses for their work.

The Jackson Drop Forging Company are erecting a new plant on Axtell street near Etna street, on the Wheeling & Lake Erie Railway. The building will be 75 x 100 feet.

The Cleveland Crane & Car Company expect to be in a portion of their new plant about July 1. The main building will be 165 x 100 feet, but it is laid out in sections so that when fully completed it will be 400 feet in length. Temporary power equipment is being installed until a large electrical power house can be completed.

The American Motor Carriage Company are planning to erect a steel structure of considerable size around and over their present frame factory on East Prospect street, work of manufacturing automobiles to continue while the erection is in process. They are bringing out a line of gasoline vehicles, and later will announce a line of electric vehicles and storage batteries of their own production.

William A. Read of this city and Carl Horix of Youngstown have bought out the plant and business of the Truss & Cable Fence Company of Hornellsville, N. Y. The main selling office will be removed to Youngstown, but the factory will continue where it is for the present. The company are doing a very good business in railway fencing. They have recently closed a contract for 100 miles of fence for the Plant System.

The C. O. Bartlett & Snow Company have taken another contract for a vessel fueling outfit. It will be built for a Toledo company. They expect in the near future to be located in their new plant.

The Winton Motor Carriage Company have their new plant well under construction, and before long they will close contracts for a considerable equipment of machine tools which will be required. It is claimed the plant will be the largest of its kind in the country.

The Acme Machinery Company have commenced work on their new factory addition and office building. Previous mention of this has been made in these columns.

The Ajax Mfg. Company, manufacturers of upsetting machinery, say the past two or three months have proven the heaviest in their history. They have recently installed a number of large tools, and will make other purchases from time to time this summer.

The Patterson Foundry Company have been bought out by J. R. Blakeslee, president of the Ajax Mfg. Company, and the business will be conducted as the Blakeslee Foundry Company. The old factory of the Chicago & Cleveland Car Roofing Company has been purchased and the foundry will be extended into this building. The foundry will do general work and will furnish many of the castings used by the Ajax Mfg. Company.

The Metal Goods Mfg. Company have sold their plant to the Osborn Mfg. Company, who will take possession after June 1. The former concern will be located in an addition to the plant of the Kirk-Latty Mfg. Company, with whom they are closely affiliated.

The Electric Controller & Supply Company, manufacturers of electric controllers and lifting jacks, are moving their factory and headquarters to the new plant of the Wellman-Seaver-Morgan Engineering Company. They have one floor, 300 x 45 feet of factory space, especially designed for their work, with fine suite of offices.

Foot, Burt & Co., manufacturers of multiple drills, are pushing work on a new factory building on St. Clair street in the heart of the East End manufacturing district. It will greatly increase their facilities, which heretofore have been badly cramped.

The American Stove & Furnace Company of Findlay have been incorporated with \$25,000 capital stock with



Frank Weber, president; S. F. Shafer, vice-president and general manager; John Schafer, secretary, and William McGowan, treasurer. The company will locate a factory in Findlay, and will manufacture a sheet iron stove patented by Samuel Shafer. A number of orders have been secured.

The Delaware Clay Mfg. Company of Delaware have broken ground for a large five-story addition to their plant. Additional power equipment will be required and new machinery will be installed for the manufacture of drain tile and fire proofing blocks.

Capt. James Davidson of Bay City, Mich., is investigating the merits of several Northern Ohio ports with a view of deciding on a site for a large shipbuilding plant which he proposes to erect. Captain Davidson claims the plant is certain to be built during the next year. Plans call for two large dry docks, a modern shipbuilding plant, boiler shop, machine shop, power house, &c.

A company are being formed at Canton by interests allied with the Stark Rolling Mill Company and the Carnahan Tin Plate & Steel Company for the purpose of erecting an open hearth plant to supply the Canton field. The plans call for three open hearth furnaces of 40 tons capacity each, provisions being made to double the capacity in case the demands should require it. Victor Beautner of Pittsburgh is consulting engineer.

The Sorensen Mfg. Company of Ravenna have been incorporated. The present shop will be enlarged and a new shop, 90 x 90 feet, will be erected. They will manufacture Sorensen X-ray machines and other electrical devices.

The new foundry of the Wilkes Foundry Company, Toledo, made its first cast a few days ago. The building is not fully completed and all machinery has not yet been installed, but the company are filling orders. The plant is on the Wheeling Belt Line. Officers are M. J. Riggs, president; C. H. Cummins, vice-president; Charles T. Wilkes, general manager; Thomas Davies, secretary-treasurer.

The Goodyear Tire & Rubber Company, Akron, will erect a large addition to their plant, installing new machinery and power equipment.

The Sandusky Automobile Company of Sandusky have been organized, with R. S. Thomas, J. J. Jackson, F. X. Frantz, V. S. Beardsley, J. S. Bennett, M. J. Caswell, P. J. Cable and J. J. Hinde as directors. The company will manufacture light automobile runabouts, and for immediate use they have leased the Caswell machine shop, in which new machinery will be installed at once. Plans are being prepared for a large new factory building to be erected on the Lake Shore and Michigan Southern Railway tracks. F. X. Frantz, general manager of the company, was formerly with the Frantz Body Company, Akron.

The Urbana, Mechanicsburg & Columbus Electric Railway Company have completed plans for a power house of 3000 horse-power capacity to be installed at Plain City. Work of building the road has been started.

The Summit Rubber Company, incorporated at Akron with \$25,000 capital stock, will erect a rubber plant at Barberton.

O. C. Barber of the Barber Match Company announces that the capacity of the Barberton match plant will be increased 50 per cent. by the erection of an addition.

#### Pacific Coast News.

SAN FRANCISCO, May 20, 1902.—The exchanges at the Clearing House still indicate an active business, and the various houses continue to report a trade larger than we have ever before had at this period of the year. We may expect a little relaxation of activity during the next month or six weeks, as usual at this time of the year, but at present there is no sign of it. The amount of sales continues to be about 10 per cent. greater than last year at this time. The activity in the building trade is unabated all over the State, and building hardware has been in larger demand than ever before in this city, although this is true of almost every locality in the whole State. Indeed, enough men cannot

now be had for the work in buildings, and the supply of lumber is short. The winter was wet and stormy and the mills were by no means able to keep up with the demand. When this is fully supplied the demand for building hardware and nails will be still greater than it is now. Of course from this time and for the next couple of months all will be busy with the harvest and the vintage, the fruit gathering, &c., and a temporary stop will be put to farm improvements, but as crops are good over the greater part of the State there will be a big demand for everything in the shape of hardware, iron and steel well into the fall. There have been very heavy sales of agricultural implements for harvesting, and all dealers and manufacturers have been as busy as they could possibly be.

The demand for oil well supplies and machinery has been large but not proportionately as large as it had been at other times during the past couple of years. The prospects of the oil fields are improving, better prices are being obtained for oil and more dividends paid, and this will encourage further investment in oil well supplies and machinery. The Standard are laying down their 300 miles of pipe line, from Kern River to Point Richmond, on the Bay of San Francisco, and are also bringing a large amount of tankage here. The oil associations, which are being organized more strongly every day, will follow the example of the Standard Oil Company, so that not only will we have cheaper oil here and more manufactures, but the Eastern manufacturers will benefit by supplying these needs. The amount of tin plate that will be needed this season will be enormous. There will be wanted 240,000,000 1-pound cans for salmon, and at least 72,000,000 2½-pound cans for fruit and vegetables, besides what is needed in other branches of manufacture. The quantity of pig tin needed will be fully equal to that of last year.

The exports of hardware and machinery have been large of late, and are steadily increasing. Mexico and Central America especially are taking large quantities of general hardware, as also are the Hawaiian Islands, although the low price of sugar there and the high price of labor combined have not been favorable to general trade. A great deal of pipe and machinery is also being sent to the islands, the former principally for irrigating purposes. On account of low prices for sugar, and the fear of the competition of Cuba, it has become necessary to have irrigating plants and the best other machinery that inventive skill can supply. For many months the sugar companies have only paid an occasional dividend or none at all, and those having charge must make herculean efforts to recover lost ground. Considerable machinery has of late gone to China and Japan and especially to Australia. A good many gasoline engines have been shipped to Australia and New Zealand, and this department of the manufacturing business here is at present very prosperous. The engines shipped are generally not very large and cost a few hundred to perhaps \$2000. These are also largely used in the State itself for purposes of irrigation, for which they are excellently adapted, being cheap. Our stove manufacturers are doing a good home trade, and as their stoves have many good qualities they are giving some Eastern brands quite a run for it. Our foundries and machine shops are all as actively employed as they could be, and the general outlook is good. The only dark cloud in the sky is the move in the House of Representatives to cut down or abolish the allowance made our shipbuilders in bidding for vessels for the navy.

J. O. L.

The Edson Mfg. Company, Boston, Mass., announce their removal from 132-136 Commercial street to 255-257 Atlantic avenue. The company have been in their present location for 47 years, but the great increase in their diaphragm pump business forces them to seek larger quarters. This company are the inventors of the diaphragm principle as applied to pumps.

It is announced on good authority that the New Jersey Zinc Company have purchased the Prime Western Spelter Company and the plant of A. B. Cockerell, both at Iola, Kan.

## PERSONAL.

H. C. Wicker, New York City, has been appointed resident manager of the Dillon-Griswold Wire Mill, at Sterling, Ill. For many years Mr. Wicker was identified with railway interests, but is thoroughly acquainted with manufacturing industries.

Willis L. King, vice-chairman of Jones & Laughlins, Limited, at Pittsburgh, has also been appointed general sales agent of that concern, with the following assistants: Roland Gerry, assistant general sales agent, in charge of the cold rolled department, and Robert Geddis, assistant general sales agent, in charge of the hot rolled department.

Kenneth Robertson, the well-known blast furnace engineer, has been appointed manager of the Duluth Furnace of the Zenith Furnace Company.

Charles Churchill, managing director of Charles Churchill & Co., Limited, of London, sailed for Europe by the Cunard steamer "Campania" on Saturday after a brief business visit to this country. His firm are the largest handlers of American machinery in Great Britain.

E. F. Milliken of Milliken Brothers, 11 Broadway, New York, has sailed for Europe. The firm have recently booked some large foreign contracts for steel structural material.

W. B. Leeds, formerly vice-president of the American Tin Plate Company and now president of the Chicago, Rock Island & Pacific Railroad, was operated on for appendicitis last week.

J. C. Rawn has been appointed chief engineer of the Pocahontas Coal & Coke Company, with headquarters at Bramwell, W. Va. He succeeds H. M. Bell, resigned.

A. J. Moxham has resigned as vice-president and as member of the board of the Dominion Iron & Steel Company.

Jno. A. Pilcher has accepted a position as mechanical engineer for the Norfolk & Western Railway Company, vice Chas. A. Seley, resigned, to accept a similar position with the Rock Island Railroad. Mr. Pilcher's appointment was effective May 15. Mr. Pilcher was for eight years connected with the Norfolk & Western Railway as chief draftsman, and for the last three years he has been connected with the Baldwin Locomotive Works.

The following are the successful candidates for the Andrew Carnegie Research Scholarships awarded by the Iron and Steel Institute: Octave Boudouard of Paris, assistant professor of chemistry at the College of France; William Campbell, now working under Professor H. M. Howe at Columbia College, New York; Alfred Campion of Cooper's Hill, England; Percy Longmuhl of Manchester; Ernest Schott, assistant in the Royal Testing Institution, Charlottenburg, Germany, and Frederick Henry Wigham, steel works manager of George Cradock & Co., Wakefield, England.

A movement has been initiated to celebrate appropriately the eightieth birthday of John Fritz of Bethlehem, Pa. It is proposed to establish a John Fritz medal, the award of which is to be placed in charge of a board whose members shall be appointed or chosen by the four national societies, the American Society of Civil Engineers, the American Institute of Mining Engineers, the American Society of Mechanical Engineers and the American Society of Electrical Engineers. The chairman of the general committee is S. T. Wellman of Cleveland, Ohio.

George A. Baird, general sales agent of the Republic Iron & Steel Company, has been elected a director of the company to take the place of William Nelson Page, resigned.

Harry Porrock has resigned the superintendency of the upper mill of the American Steel Hoop Company at Youngstown, Ohio, to become superintendent of the Brown-Bonnell plant of the Republic Iron & Steel Company.

John W. Garland, president of the Garland Chain Company, at Rankin Station, Pittsburgh, is one of the

largest holders of realty in Pittsburgh. Mr. Garland recently bought some property on Liberty avenue in Pittsburgh, for which he paid about \$100,000.

Harry C. Doyle of Pittsburgh has been appointed general superintendent of the pipe mill of the Reading Iron Company, Reading Pa.

J. P. Allen, formerly sales agent of the American Steel Casting Company, has resigned to accept a position as superintendent of the new plant to be built near Parnassus, Pa., by the Railroad Steel Casting Company, recently organized at Pittsburgh.

Samuel McDonald, formerly superintendent of the Bessemer plant of the Republic Iron & Steel Company, at Youngstown, Ohio, has been made superintendent of the Ensley plant of the Tennessee Coal, Iron & Railroad Company, at Birmingham, Ala.

Clement F. Street, until recently with the Dalrymple Malleable Iron Company, has accepted a position with the Wellman-Seaver-Morgan Engineering Company of Cleveland.

Bion J. Arnold, an eminent Chicago electrical engineer, has been selected to revise the street railway system of Chicago, under the direction of the city authorities. Mr. Arnold will undertake one of the most important engineering propositions which has thus far been brought to the attention of an electrical engineer.

William Filbert, at present assistant controller of the United States Steel Corporation, has been appointed controller of the company, to succeed Edward Shearson, who has resigned, his resignation to take effect June 1. Mr. Shearson will hereafter be associated with the new brokerage firm of Shearson, Hammill & Co. of New York.

E. F. Wood, assistant superintendent of the Homestead Steel Works of the Carnegie Steel Company, has resigned. H. D. Williams, superintendent of the 28 and 36 inch blooming mills, has been appointed to succeed him. G. Edward Welsner has been appointed to succeed Mr. Williams.

Joseph S. Schwab of Pittsburgh has sailed for an extended trip abroad.

Geo. T. Harrison, for the past 11 years with Howe, Brown & Co., Pittsburgh, has been appointed general sales agent of the National Steel Refining Company, with an office at 618 Bourse Building, Philadelphia.

## April Imports and Exports.

The report just issued by the Bureau of Statistics of the United States Treasury Department for the month of April shows a fairly satisfactory condition prevailing in our imports and exports of iron and steel products. Notwithstanding the decline in our export trade in heavy products, the movement abroad of manufactured iron and steel generally shows a gain over the corresponding month last year. The total value of exports of iron and steel and manufactures thereof, excluding ore, was \$9,320,633 in April of this year, as compared with \$9,081,223 in April last year.

The heaviest falling off in exports of heavy products occurred in steel rails and pig iron. Exports of steel rails fell from 41,389 tons in April of last year to 4501 tons in April of this year. Pig iron declined from 5695 tons to 1570 tons. The reduction in other items was small, and in a few instances, as in the case of bar iron, wire rods and structural materials, an actual gain is shown.

The imports of iron and steel increased sufficiently in the month of April to show a gain of a little over \$1,000,000 in value, as compared with the corresponding month of last year. The total, however, is small as compared with the value of our exports. The total of iron and steel imports, not including ore, was \$2,379,892 in April of the present year, as compared with \$1,354,543 in April of last year. The largest gain is shown in pig iron and steel billets. The former jumped from 3335 tons in April, 1901, to 19,067 tons in April of this year. Steel billets increased from 436 tons to 11,987 tons. The changes in other items were not specially significant, merely showing a tendency to larger quantities.



# HARDWARE.

MANUFACTURERS in general are undoubtedly gratified that the jobbing consolidation did not go into effect. Apart from the feeling that it was a factor the influence of which it would be hard to forecast, they realize that the danger of a troublesome kind of competition has been averted. While those who were identified with the consolidation project were very conservative in their statements as to the relations the National Hardware & Metal Company would bear to the manufacturers and the regard for the manufacturers' interests which would constantly direct their policy, manufacturers could not ignore the fact that there would be grave danger that their interests would be jeopardized. Even in the present state of the Hardware market it is a matter of common knowledge that some of the large jobbing houses are in practical control of certain small manufacturers who produce for them various lines of goods, thus disposing in some cases of their entire output. In many instances these jobbing houses practically own the factories, which have been perhaps fostered under their patronage. In this way such jobbers are practically manufacturers and are enabled to realize a manufacturing in connection with a jobbing profit. Such position, however, is obviously a very uncomfortable one for the manufacturer. With the great aggregation of jobbing interests such as was proposed, it is plain that in many lines the trade of the consolidation would be of such volume as to take the product of factories of very respectable dimensions, and under these circumstances the probability is that in the regular course of business the great jobbing house would be fostering manufacture under their own auspices or in such close relation with some favored manufacturer that practically the making and the selling of goods would be under the same ownership. This would be the virtual establishment of new and very troublesome competition for the manufacturers who preferred to retain an independent position. The extent to which this tendency has shown itself under conditions which have heretofore prevailed justified manufacturers in regarding this probable result of the consolidation of jobbing interests with more or less apprehension. For even though the promoters of consolidation might insist, and with unquestioned sincerity, that they intended to keep entirely separate the manufacturing and the distributing of goods, it is evident that the operation of the laws of trade would tend to make them ignore this purpose. The very spirit of consolidation is the reaching out to larger control, and if the distribution of goods under the proposed merger were as successful as was anticipated by those who advocated it, the manufacturers would almost certainly feel its influence to the detriment of their profits and independence.

While the project of jobbing consolidation on a large scale, which occupied so conspicuous a place in the trade for several months past, may be regarded as abandoned, there are indications that something in the way of local consolidation may be attempted. There is obviously no reason why jobbing houses in the same city or cultivating the same territory should not in some cases find it advantageous to unite their interests. There is no doubt something may be gained in the direction not only of economy, but also of increased efficiency of business management, by a coming together of houses of moderate size when their consolidation transforms them into one strong concern which will take a prominent

place in the trade. Besides the advantages just named there would be the important advantage of being enabled to purchase goods on very favorable terms, which would compare well with those which are given the great houses which occupy a commanding position among the distributors of Hardware. Such houses are understood to receive an extra 2½ or 5 per cent. below the prices which are given to the jobbing trade generally, and this advantage in buying is an important matter when the profits of the business are considered. Consolidation within reasonable lines, even if it went no further than to unite the interests of houses in the same territory or perhaps the same city, would result in making them much more important factors in the market than is possible under present conditions. There is little doubt that consolidation within these comparatively narrow lines would be free from the very serious objections which made the recent gigantic project impracticable and doomed it to disaster. That the effort which has just come to grief may serve an admirable purpose in calling attention to the feasibility of consolidation within proper bounds is illustrated by the reports which are current that negotiations are already being conducted to effect such a merger of interests in more than one trade center.

One of the features of the Hardware trade which is constantly becoming more pronounced is the gradual extension of the lines of goods which are being carried by merchants, both wholesale and retail. Almost every store the management of which is characterized by energy and success handles a variety of goods which a few years ago would be regarded as foreign to the Hardware stock, but which are now looked upon as properly having place in connection with such goods as in the old times were considered to belong to the Hardwareman's province. An impressive illustration of this tendency is found in the catalogues of some of the leading jobbing houses, for in this way an opportunity is given, by means of a glance through the pages of the ponderous volumes, to observe the variety of articles which are offered to the trade. A forcible instance of this is found in the catalogues of one of the most prominent and successful of these houses. The scope of their business is indicated in the fact that separate catalogues referring to a variety of lines which under the old conception of things belong outside of Hardware are issued, devoted to the following important classes of goods: Paints and Colors, Mill and Lumbermen's Supplies, Heaters and Ranges, Sewing Machines, Guns and Sporting Goods, Mechanical Rubber Goods, Clocks and Art Goods, Incandescent Lamps, Bicycles and Sundries, Brass and Iron Bedsteads, Tables, &c., Hammocks and Outdoor Furniture, Baby Carriages and Harness. The extent to which the practice of this house represents the trade and the effect which this enlargement of the Hardware line may have upon Hardware manufacturers and merchants are important questions which deserve the consideration of all interested.

## Condition of Trade.

With the closing days of the month trade, while continuing in large volume, is feeling the effect of the near approach of the summer. The influence of the changing season is observed not only in the somewhat diminished activity, but in the different classes of goods called for, as summer goods are in especial demand. Manufacturers with few exceptions are busy on orders and most of them are subjected to urgent requests from

merchants for prompt shipments. The jobbing trade very generally report an active business, as goods sell readily in fair but not often in speculative quantities. Season goods are generally in limited supply, and there is more or less scarcity in several lines. Manufacturers of many staple goods in both Shelf and Heavy Hardware are seriously behind their orders as a result of the almost unprecedented activity of the past few months. Since the abandonment of the consolidation scheme the houses who contemplated such giving up of their identity, and consequently were not so aggressive as usual in entering the market, have been placing orders, and their business makes a perceptible addition to the current volume. There is a disposition on the part of the large trade to place orders for fall requirements at an early date, apprehending that if nothing occurs to disturb the present activity it may be a difficult matter to get goods as promptly as the trade will require. Enterprising jobbers, and this term describes practically all the houses who have an important position in the market, recognize the obligation to have well assorted stocks from which their customers can draw, even if in order to secure them it be necessary to order an unusual length of time in advance. In the present state of the market the difficulty the manufacturers experience in getting raw material, together with the heavy demand for their products, makes it necessary for the larger trade to anticipate their wants more liberally than has been the case even during the years of exceptional prosperity which have characterized the trade of late. In connection with this great demand there is an earnest effort on the part of manufacturers to meet the requirements of their customers, and the factories are generally running to full capacity and in many instances are being furnished with increased facilities.

#### Chicago.

(By Telegraph.)

The active movement in Heavy Hardware during the week has included Bar Iron, Blacksmiths' Supplies, Steel of various shapes, Spokes, Rims, Hubs and various other Wagon and Carriage Material. A strong tone has continued to prevail and full prices have been readily realized. An unexpected scarcity has developed in Cut Nails, jobbers finding it impossible to have orders filled promptly. Wire Nails, however, are in ample supply, and the demand is only moderate. The order trade for special goods, such as Lawn Mowers, Hose, Garden Tools, &c., has been materially increased, and although orders, especially for Lawn Mowers, have been placed by jobbers from 20 to 25 per cent. in excess of a year ago, duplicate orders to manufacturers have been necessary to meet the demand coming from retailers, and so urgent has been the call that manufacturers have received orders by telegraph. One feature of interest has been the revival of the demand for Bicycles, a little firmer tone having developed, which has doubtless stimulated the demand. Some of the largest local houses find it necessary to work a night force to fill orders already booked for the general line of what is known as Shelf and Special Hardware. City orders for Builders' Hardware have been less numerous, as the high prices for lumber, bricks and other building material have curtailed the number of building permits taken out recently. The demand from the country for Builders' Hardware, however, has continued very active, several manufacturers reporting a large volume of business, not only larger than a year ago, but in some cases in excess of transactions ever reported before in one month. With scarcely any exception, jobbers report the volume of business transacted in May not only equal but larger than in April this year. The urgent demand for Gas and Oil Stoves, Screen Doors, Ice Cream Freezers, &c., has continued throughout the week. There is still some little interest manifested in the attempted combination of

Hardware jobbers, but rather more in the way of reminiscence than the expectation of its final accomplishment in any form.

#### St. Louis.

(By Telegraph.)

The general volume of business in the Hardware market continues well up to recent figures and a satisfactory feeling exists among the jobbers. Distribution is well divided among the various seasonable specialties, but a particularly popular item is said to be Lawn Mowers, and the supply from the manufacturers in the higher grades is on a limited scale. Carpenters' Tools are largely specified, and Cradles, Snaths, Hay Forks and other harvesting necessities are equally in favor. A new Hammer price-list is in circulation. Owing to the short supply of raw material the price-list for Sad Irons of the different grades and styles has a hardening tendency. In the heavy department of the market the volume of trade being handled is said to be of good quality and quantity.

### NOTES ON PRICES.

**Wire Nails.**—The condition of the Wire Nail market has not changed materially during the week. Manufacturers are shipping Nails more promptly than for some time, but there is still occasional cause for complaint. Demand continues in good volume. Differentials between jobbers' and retailers' prices are not always maintained on carload lots. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.05
To jobbers in less than carload lots.....	2.10
To retailers in carload lots.....	2.10
To retailers in less than carload lots.....	2.20

**New York.**—Local demand for Wire Nails is satisfactory, with prices well maintained. Stocks are now kept well assorted, owing to the more prompt shipments made by mills. The market is represented by the following quotations: Small lots from store, \$2.30; carloads on dock, \$2.18 to \$2.20.

**Chicago, by Telegraph.**—While the demand for Wire Nails is less active than for some weeks past, the volume of business of the mills is fully equal, if not larger than the trade at the corresponding time a year ago. As this is the season of the year for the demand to decrease, however, it is probable there will be an accumulation in the next month or two. The jobbing demand is only moderate, but the market remains steady. Single carloads are selling at \$2.20, and small lots at \$2.25 to \$2.30 from store.

**St. Louis, by Telegraph.**—Wire Nails are moving in very good volume and jobbers refer to present conditions as being favorable. Carload lots are quoted at \$2.25, small lots from store being \$2.30.

**Pittsburgh.**—Demand for Wire Nails shows some falling off, and there is very little, if any, trouble now on the part of buyers to get prompt deliveries. The tone of the market is fairly strong, but in some cases established differentials between jobbers' prices and retail prices are not observed. We quote Wire Nails at \$2.05 in carloads and \$2.10 in less than carloads, f.o.b. maker's mill. As noted last week, a meeting of the Wire Nail mills will be held on May 29, but no change in prices is expected.

**Cut Nails.**—There is some improvement noticed in shipments of Cut Nails from mill, as they are now being made more promptly. Demand is fair and the market is firm at the following quotations, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.05
Less than carload lots.....	2.10

**New York.**—There is a moderately active demand for Cut Nails in the local market. Quotations for carloads and less than carloads are as follows:

Carloads on dock.....	\$2.18
Less than carloads on dock.....	2.23
Small lots from store.....	2.30



**Chicago, by Telegraph.**—There has been an active demand for Cut Nails, and some jobbers have found difficulty in filling orders promptly. This is probably only a temporary matter, however. The market continues firm and small lots are selling at \$2.30 from store.

**St. Louis, by Telegraph.**—A very fair amount of demand exists for Cut Nails, and prices show no change. Small lots from store are quoted at \$2.30.

**Pittsburgh.**—Demand is only fair, not being as large as some time ago. The mills are able to make better deliveries as the supply of Steel is improved. We quote Cut Nails at \$2.05, base, in carloads, and \$2.10 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination.

**Barb Wire.**—The demand for Barb Wire is fair and the tone of the market firm. Prices are represented by the following quotations, f.o.b. Pittsburgh, 60 days, or 2 per cent. for cash in 10 days:

	Painted.	Galv.
To jobbers in carload lots.....	\$2.60	\$2.90
To jobbers in less than carloads.....	2.65	2.95
To retailers in carload lots.....	2.70	3.00
To retailers in less than carloads.....	2.80	3.10

**Chicago, by Telegraph.**—There is a fair movement on old orders for Barb Wire, but there is less demand from retailers, who are experiencing but a light call, this being the active time on the farm. Painted sells at \$2.80 and Galvanized at \$3.10 in single carloads, with 5 cents extra for small quantities.

**St. Louis, by Telegraph.**—Jobbers continue to handle a very fair volume of orders for Barb Wire. Small lots from store are quoted at \$2.90 for Painted and \$3.20 for Galvanized.

**Pittsburgh.**—There is a moderate demand, but not as large as some time ago. The tone of the market is fairly strong. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.60; Galvanized, \$2.90; less than carload lots, Painted, \$2.65; Galvanized, \$2.95.

**Plain Wire.**—The current demand on the mills for Plain Wire is somewhat more moderate, but contract orders are keeping them fully employed. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots.....	\$2.00	\$2.40
To jobbers in less than carload lots.....	2.05	2.45
To retailers in carload lots.....	2.05	2.45
To retailers in less than carload lots.....	2.15	2.60

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9.....	Base.....	\$0.40 extra
10.....	\$0.05 advance over base.....	.40 "
11.....	.10 " " " " " " " " " " " "	.40 "
12 and 12½..	.15 " " " " " " " " " " " "	.40 "
13.....	.25 " " " " " " " " " " " "	.40 "
14.....	.35 " " " " " " " " " " " "	.40 "
15.....	.45 " " " " " " " " " " " "	.75 "
16.....	.55 " " " " " " " " " " " "	.75 "
17.....	.70 " " " " " " " " " " " "	1.00 "
18.....	.85 " " " " " " " " " " " "	1.00 "

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

**Chicago, by Telegraph.**—There has been less active demand for Plain Wire, but the mills are still busy making shipments on previous contracts. A firm tone continues to prevail throughout from manufacturers to retailers. Prices are unchanged, jobbing lots selling at \$2.20 from store.

**St. Louis, by Telegraph.**—The general conditions ruling in the market for Plain Wire are satisfactory. Jobbers continue to quote No. 9 at \$2.25 and Galvanized at \$2.65.

**Pittsburgh.**—Demand for Plain Wire is large and, while the mills are still somewhat behind in deliveries, orders are being shipped more promptly than for some time. We quote Plain Wire at \$2 and Galvanized at \$2.40 in carload lots, f.o.b. Pittsburgh. Slight advances are charged for small lots.

**Steel Squares.**—An advance of about 10 per cent. has been made in Steel Squares, the regular printed discount of the manufacturers being 66 2-3 per cent. and

the price to the retail trade discount 70 and 7½ per cent. The market on this line is firm and prices are well maintained, with good volume of business.

**Washers.**—Several advances have of late been made in the prices of Raw Washers and the market has a decidedly firm tone. In the quotations of the manufacturers a differential of 20 cents per 100 pounds is made between the price to jobbers and retailers, and for less than keg lots of a size the following extras are regularly added:

Packages of 100 up to 200 lbs., 10c. per 100 lbs. additional.
Packages of less than 100 lbs., 50c. per 100 lbs. additional.
Packing in 5 and 10 lb. packages, ½c. per lb. net.
Packing in 1-lb. packages, 1c. per lb. net.

**Wire Cloth.**—The scarcity in Wire Cloth to which we have before referred still continues and jobbers find it difficult to meet the requirements of their customers. Under these conditions the market is decidedly firm, and those having stocks of the goods are able to realize good profits.

**Anvils.**—The manufacturers of Wrought Iron Anvils have recently been getting into closer relations and have taken measures to secure more uniformity in quotations. They report a most excellent condition of business and a promising outlook for trade.

**Copper Wire.**—The association of manufacturers producing bare Copper Wire for numerous purposes discontinued their organization Wednesday, May 21, after years of association, and adjourned *sine die*, with, it is thought, little probability of getting together again, at least in the near future, leaving the market an open one on this class of wire. This action was brought about by the creeping in of new competition by outside concerns, assisted by some internal friction in the association. The price is now 13½ to 14 cents per lb. The Insulated Wire Association, making Weatherproof and Magnet Copper Wires, held a meeting Tuesday, May 27, and made approximately a reduction in price of ½ cent per lb. On Weatherproof the base is now 14½ cents. On the Magnet Wire, the reduction is ½ cent per lb. from the net list.

**Cordage.**—Prices for future delivery of Manila and Sisal fibers have fallen off somewhat, and while there is no change in published quotations the Rope market shows some weakness. This is not noticeable for small lots, but for large and desirable orders concessions are made to secure business by some manufacturers. Jobbers who made favorable contracts at low prices are in a position to sell lower than manufacturers' card prices. Quotations for small lots are as follows: Sisal Rope, on a basis of 7-16 inch and larger, 10 to 10¼ cents per pound; Manila Rope, on the same basis, 13½ cents per pound.

**Paris Green.**—The demand for Paris Green continues active and largely in excess of the manufacturers' anticipations. Stocks in the hands of some manufacturers are exhausted and they have withdrawn from the market. Some other makers are refusing to accept orders from any but their regular customers. It is early in the season to report a scarcity of Green, but as makers prepared for a smaller demand than has developed some find themselves oversold. Under these conditions the market has stiffened and there is more uniformity in prices. The market is represented, in a general way, by the following quotations:

	Cents.
Arsenic kegs or casks.....	12
Kegs, 100 to 175 pounds.....	12½
Kits, 14, 28 and 56 pounds.....	13½
Paper boxes, 2 to 5 pounds.....	13½
Paper boxes, 1 pound.....	13½
Paper boxes, ½ pound.....	14½
Paper boxes, ¼ pound.....	15½

**Glass.**—All of the American Window Glass Company's factories, it is believed, went out of operation on May 24, also a majority of the Federation Window Glass Company's plants. The Independent Glass Company claim that all their factories are in operation, at least no attempt has been made by the company to suspend operations. On the other hand, they state that they will

continue in operation until June 30. Under these conditions the provisional wage scale granting the workmen an increase of 10 per cent. in wages, promised by the American Window Glass Company if there was a general suspension of all Glass factories on May 24, will become inoperative. In that case it has been intimated that wages would be much less for 1902-03 than during the past fire. No change in prices was made at the meeting of the National Window Glass Jobbers' Association, held at Chicago last week, according to information received. It has been reported that in the East jobbers belonging to the association were selling little Glass because jobbers who had purchased from factories outside the combine were cutting prices. It is understood, however, that association jobbers are meeting any prices that have been made, and that the lack of demand is owing to the unsettled conditions of labor. Quotations are as follows:

	Discount.
From store, single and double strength.....	89 %
F.o.b. factory, carload lots:	
Single and double strength.....	90 and 5 %

**Paints and Colors.**—*Leads.*—White Lead in Oil is in active demand both in the West and South. In the East an improvement is noticed in the requirements of the trade. It is understood that there is some delay in shipments, owing to the scarcity of stocks in manufacturers' hands. Quotations are as follows: In lots of 500 pounds or over, 6 cents; in lots of less than 500 pounds, 6½ cents per pound.

**Oils.**—*Linseed Oil.*—The market for Linseed Oil is firm at former prices, no advance having been made. Crushers are reported to be well sold ahead, and large consumers as being supplied, in some cases, to August and September. There is a fair jobbing demand from this and nearby points. Quotations are as follows, according to quantity: City Raw, 66 to 67 cents; out of town Raw, 63 to 65 cents per gallon.

**Spirits Turpentine.**—The demand for small lots of Turpentine at this point is light. The market is firmer, owing to a stronger feeling at the South. Consumers here seem to have their wants covered for the near future, and are waiting for a more favorable market before purchasing. Quotations are as follows, according to quantity: Southern, 47¼ to 48¼ cents; machine made barrels, 48¼ to 48½ cents per gallon.

### REQUEST FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

The most important part of the town of Houlton, Maine, was destroyed by fire on the 17th inst., the loss being in the neighborhood of \$500,000. Among the business houses sustaining heavy damage was the A. H. Fogg Company, jobbers of Hardware, &c., who, however, managed to save \$2500 worth of stock from the flames, although the variety is badly broken. The company carried a good amount of insurance, and with characteristic courage opened up almost directly opposite their old stand on the morning of the 19th. All their catalogues and price-lists were burned, so that they will be pleased to have manufacturers send others to replace them.

### STUDEBAKER BROS. MFG. COMPANY.

THE STUDEBAKER BROS. MFG. COMPANY, South Bend, Ind., have recently put on the market the Hoosier Dump Wagon, designed for contractors' use on railroad work, building and municipal improvements, &c. The Wagon dumps from the bottom by means of a device operated by levers, without the necessity of the driver leaving his seat. The bottom is closed with ease while driving from the dumping ground. The company have lately established a distributing repository at Dallas, Texas, to better enable them to care for their interests in that section. They expect soon to put on the market the Studebaker Electric Automobile,

which will be introduced to the trade in several different designs of body.

## Hardware Organizations.

### Southern Hardware Jobbers' Association.

The programme for the twelfth annual convention of the Southern Hardware Jobbers' Association has been issued. The meeting will be held at the Marlborough House, Atlantic City, N. J., June 17-20. The imposing programme gives the present officers and standing committees of the association, followed by the Reception Committee, who will look after the coming convention. This committee consists of 63 well-known members of the trade, Irby Bennett being chairman, and H. H. Beers, sergeant-at-arms. The work of the convention will begin on Tuesday, June 17, at 10 a.m. This session will be an open one, and will be attended by manufacturers, jobbers and others. The address of welcome to the manufacturers will be made by C. E. Speer of the Speer Hardware Company, Fort Smith, Ark., the response being made by F. L. Clark of Alabama Tube & Iron Company, Birmingham, Ala. The afternoon session will be of an executive character, and one of its features will be reading a prize essay on "Trade Mismanagement and Its Consequences, as Viewed From a Traveling Man's Standpoint."

The morning session on the 18th will be another joint session, when the following papers will be read by the gentlemen named, each paper being followed by open discussion:

"Manufacturers' Associations and Their Relation to the Hardware Jobbing Trade," by Fayette R. Plumb, Philadelphia, president of the American Hardware Manufacturers' Association.  
 "The Manufacturer's Agent and the Jobber," by A. S. Jones, Memphis, Tenn.

"Factory Delays in Filling Specified Contracts on Seasonable Goods," discussion opened by a member.

"Reciprocity," by John C. Schmidt, president of the Standard Chain Company, York, Pa.

"N. I. T.," by S. G. Gillilan of the Belfont Iron Works Company, Ironton, Ohio.

"Twenty Years of Hardware," discussion opened by a member.

"The Effect of Prices on Consumption," by W. H. Matthal of the National Enameling & Stamping Company, Baltimore.

"Commercial Evolution," by Chas. P. King of the American Iron & Steel Mfg. Company, Atlanta, Ga.

"Have Combinations and Consolidations Proven Beneficial or Detrimental to the Hardware Jobbers?" by F. P. May of F. P. May & Co., Washington, D. C.

There will be no session Wednesday afternoon or evening, which will be devoted to entertainment.

On Thursday, 19th, an executive session will be held in the morning, when the following papers will be read:

"Causes of the Present Unsatisfactory Condition of the Hardware Jobbing Business," discussion opened by a member.

"Errors in Railroad Classifications," by W. E. Newill, King Hardware Company, Atlanta, Ga.

"How Can We Help Our Retail Friends?" by R. F. Bell of the R. E. Bell Hardware Company, Weatherford, Texas.

"Proper Basis of Credit," by J. Norman Wills of the Odell Hardware Company, Greensboro, N. C.

Thursday afternoon and evening will again be devoted to entertainment and recreation. The convention will close with an executive session on Friday morning, when officers will be chosen for the ensuing year.

A railroad rate of one fare and a third for the round trip has been granted to the association on the certificate plan.

### Arkansas Retail Hardware Dealers' Association.

The Arkansas Retail Hardware Dealers' Association will hold their third annual meeting at Little Rock, on June 18 and 19. An interesting programme has been prepared, including papers and discussions on a number of important topics. Among the papers which will be read are the following:

"What Effect Will the Combine of Large Hardware Companies Have on the Retailers?"

"The Most Important Things in Conducting a Hardware Business."

"Fakes and Fakirs, or Leg Pullers."

"Cash Registers vs. Cash Drawer."



### DEATH OF ROBERT MANN.

**R**OBERT MANN, from whom the Mann Edge Tool Company, Mill Hall, Pa., take their name, died suddenly at his home in Philadelphia, May 20, of heart disease. This was unexpected, as he had been enjoying his usual good health with the exception of a slight cold.

Robert Mann was born in June, 1824. He was the youngest and last survivor of several brothers who were prominently identified with the Axe manufacturing business of the country continuously since 1825. His father, William Mann, began the manufacture of Axes and other hand Tools in a small way in Montgomery County, N. Y., about the beginning of the last century. His elder brothers, William Mann, Jr., and Harvey Mann, established Axe factories at Bellefonte and Lewistown, Pa., in 1825 and 1835, respectively. Robert, the deceased, 22 years younger than William, the elder of the brothers, worked for and learned much of the art of manufacturing Axes in the factory of the latter at Lewistown, and in 1847 established at Mill Hall, Pa., the Axe manufacturing business of Robert Mann & Co., the firm name subsequently becoming Robert Mann & Sons. The Mann Axe factories at Mill Hall, Lewistown and Bellefonte



ROBERT MANN.

were continuously successful and an important factor in the Axe business until 1890, when they became a part of the American Axe & Tool Company, who continue to successfully operate the factories at Mill Hall and Lewistown under the management of sons of the original owners. One of the leading and most valuable brands of Axes of the American Axe & Tool Company still bears their name, which is well known in this country and many others.

Mr. Mann is survived by his second wife, to whom he was married in 1900, one daughter and five sons, all of the latter being identified with the Axe business, as follows: Thomas R. Mann of Lock Haven, Pa., formerly of Thomas R. Mann & Co. of Mill Hall, Pa., the company having been Robert Mann and Robert Mann, Jr., which firm became a part of the American Axe & Tool Company when they were organized in 1890. A. C. and William H. Mann, formerly of Robert Mann & Sons of Mill Hall, Pa., and now superintendent and assistant superintendent respectively of the American Axe & Tool Company at the same place. Joseph R. Mann, formerly of Robert Mann & Sons, and Robert Mann, Jr., formerly of Thomas R. Mann & Co., above referred to, president and vice-president respectively of the Mann Edge Tool Company of Lewistown, Pa.

Robert Mann was kind, gentle, generous and genial, winning and retaining the friendship of those with whom he came in contact. From a poor boy he rose to

a position of wealth and fame through industry and devotion to business.

### "THE CORBIN."

**T**HE first number of "The Corbin," which will be issued monthly in the interest of P. & F. Corbin, New Britain, Conn., is now being distributed to the trade. From the announcement of the publishers we make the following extracts, which indicate that one of the objects of the periodical is to promote the personal element in trade:

We send you this initial number of the first volume of "The Corbin," and with it goes our earnest hope that you may find it good. We have striven to put into it something of ourselves, that you may know us better, something about our goods which we think will interest you, and a few matters of a varied nature to add savor to the whole.

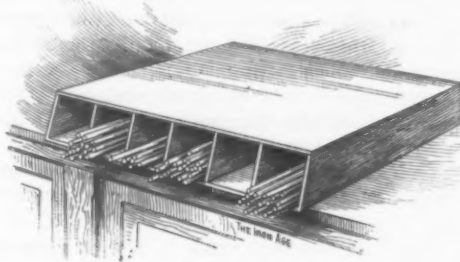
We are firm believers in the personal element in trade. We believe that there is more to commerce than an exchange of goods for money, and we want to come into more intimate personal relations with the thousands of royal good fellows who have to do with Builders' Hardware. We find your names upon our ledger, signed to letters, written upon plans of buildings, and blazoned in the trade journals as men who are doing good work in the world's progress; and those lucky chaps, our knights of the road, bring us interesting stories of your personality. Many of you we know, and to these it will be doubly pleasant to send this monthly greeting. To the others this will evidence our friendly interest until we can meet in person.

The first number consists of 16 pages, magazine size, and the leading article is devoted to the company's new trade-mark. They have not heretofore adopted any general trade-mark covering all goods of their manufacture, contenting themselves with casting the word "Corbin" on the cases of their Locks, stamping it upon the name plate of their Door Check, printing the name upon box labels, and branding their Locks with pin tumbler cylinders "Harvard." The time has come, however, when they think the interests of their friends and themselves will be served by the adoption of a symbol by which Corbin goods can be distinguished on sight. The trade-mark consists of the word "Corbin," the capital letter inclosing the others, making a clear and tasteful design.

Another feature of the publication is the announcement of a prize competition, open to all Builders' Hardwaremen who handle Corbin Hardware. A prize of \$25 is offered for the best method of "drawing off" schedules of Hardware from plans of buildings. "The Man in the Corner," who will be pleasantly remembered by the trade in connection with other trade literature issued by the company in the past, contributes an article entitled "Just Between You and Me." Other articles relate to the Corbin Unit Lock Set, the ornamental value of Hardware, and the Screw Department, the back cover illustrating some of the work done on their Automatic Screw Machines. To round out, other matter of a humorous nature or of general interest is given.

### A GAGE GLASS BOX.

**O**N one of the shelves in the store of James Wilson, Stamford, Conn., rests a little homemade wooden box that is used for holding Gage Glasses of different



A Gage Glass Box.

sizes. This box, as is shown in the accompanying illustration, is 17 inches wide, 3 inches high and 12 inches deep, and is divided into six pigeon holes or compartments for the different styles of Glasses. This is a simple and convenient way of taking care of this line of goods.

## Retail Hardware, Implement and Vehicle Association of the Indian Territory.

THE third annual meeting of the Retail Hardware, Implement and Vehicle Association of the Indian Territory was held in Vinita on May 13 and 14. The first session was called to order in Byrd Ada Opera House at 8 p.m. on the 13th by Vice-President J. G. Smith of Canadian, in the absence of President Mowbray, who missed his train and did not get in until midnight. Hon. Preston S. Davis welcomed the visiting dealers and the convention to Vinita in an eloquent address. Vice-President J. G. Smith responded, after which the convention was addressed by W. S. Thomas, president of the National Association of Implement Manufacturers, on the "Relations That Should Exist Between the Manufacturer and the Retailer." The convention adjourned at 9.30 to the Whitney dining room, where a very elaborate banquet was tendered the convention by the dealers of Vinita.

### Wednesday's Proceedings.

On Wednesday morning at 9.30 the convention was called to order by President Mowbray. The roll was called by the secretary, 16 members being present. After receiving the new members who presented themselves, 16 in number, the report of the Executive Committee was read by the secretary. Then came the report of Secretary-Treasurer Sam. R. Frazee of Vinita, which was as follows:

### Secretary-Treasurer's Report.

As I took charge of the office as your secretary about February 15 and there has been nothing done since that time, my report is not of very great importance.

After being notified by President Mowbray of my appointment and receiving the books from your late secretary, Mr. Miller, who moved out of the Territory and resigned the office, I at once searched the records to find who I should look after for their dues, as I knew no money had been coming into the treasury from either new or old members, and I found all of the charter members of the association, whose dues should have been collected July 12, 1901, had never paid. I proceeded to have some statements printed and sent them out to all of the delinquent members with a short letter stating the fact that I had lately been appointed to fill out Mr. Miller's unexpired term, but to my disappointment, and I will say disgust, I received only one response and that had the necessary \$3 dues inclosed. Then I thought to do as some of our brothers in the States do—that is, draw sight drafts on them, but, after considering the fact that they had been greatly neglected and, I was sure, with regret to themselves, I decided to let it go along as best we could until our meeting here.

After this I began to wonder whether or not we could have an association in the Indian Territory, and I said to myself with proper work and in the right way we can have just as good an association as any State in the Union, and with this new feeling I commenced to prepare for our meeting here and gather together what I could to cause the dealers to at least give it a thought and know that a few dealers in the Territory want an association. At this I mailed out an invitation urging dealers to attend this meeting.

During this time I was in correspondence with the different railroads of the Territory, and when I mailed you the programmes last week I was pleased to be able to inform you of the fact that reduced rates for the occasion would be in force, providing that we had 50 in attendance.

Along with this report I want to say as your treasurer I am pleased to announce that we have \$39.50 in the treasury without the money taken in at this meeting. Not including the new members taken in at this convention we have a membership of 27, and the prospects are very flattering indeed for one of the best associations in the country.

We insist that each and every member consider himself a committee of one to encourage this work.

The report of the Insurance Committee was read and accepted. It recommended forming a mutual insurance company

as soon as the association was large enough to support it. The president's address was next in order. Mr. Mowbray recommended that the association become members of both the National Retail Hardware Dealers' Association and the National Federation of Implement Dealers. He also referred to the evils confronting retail dealers, such as department stores, catalogue houses, jobbers and manufacturers selling to other than legitimate trade, &c., and the necessity for concerted action.

Fred. Parkinson of Wagoner read a very able paper on "Trusts," which was interesting and instructive. He termed the Hardware Jobbers' Trust, the collapse of which was not known at the time of the meeting, as "Simmons' Hardware Regulator." This subject was discussed at length by quite a number of the members. Some of those who discussed this subject were: Vice-President J. G. Smith, Mr. Gee of Turner Hardware Company, W. S. Thomas of Springfield, Ohio; M. L. Corey, secretary of the National Retail Hardware Dealers' Association; J. B. McAllister, T. T. Pyle and President Mowbray.

The president appointed the following Committee on Resolutions: A. L. Severance, Fred. Parkinson, John N. McNabb, A. N. Green, E. C. Stretch.

E. C. Stretch of Vinita closed the morning session with an interesting paper on "The Implement Man as a Necessity."

The afternoon work was initiated by J. B. McAllister, who delivered an address on "How to Increase Your Sales."

### M. L. Corey's Address.

In the absence of W. H. Durrrough, who was on the programme for an address on "How Best to Meet the Competition of Catalogue Houses and Department Stores," Mr. Corey of the National Association took up this subject, and delivered a very able address, which was very much enjoyed by the entire convention. He also referred to the objects of the National and State associations.

After Mr. Corey's address a motion was offered and passed which made the Territory Association a member of the National Retail Hardware Dealers' Association.

A motion was also passed making the association members of the National Federation of Implement Dealers.

The dues of the association were increased from \$3 per year to \$5, this amount covering the dues for both the National Retail Hardware Dealers' Association and the National Federation of Implement Dealers.

### Delegates to National Conventions.

The convention voted one delegate and one alternate to each of the national associations, the following being the delegates selected:

To the National Retail Hardware Dealers' Convention at Chicago, J. B. McAllister delegate and Sam. R. Frazee alternate.

To the National Federation of Implement Dealers at Minneapolis, Geo. W. Mowbray delegate and L. Conner alternate.

South McAllister was selected for the next meeting place the second Tuesday in May, 1903.

### New Officers.

The newly elected officers are as follows:

PRESIDENT, J. G. Smith, Canadian.  
FIRST VICE-PRESIDENT, Fred. Parkinson, Wagoner.  
SECOND VICE-PRESIDENT, E. C. Stretch, Vinita.  
SECRETARY, Sam. R. Frazee, Vinita.  
TREASURER, J. B. McBride, Spero.

The following committees were named by the president:

EXECUTIVE: J. N. McNabb, Wewaka; Ed. Lee, Vinita; A. L. Severance, Durant; A. Gibson, Mounds; J. B. McAllister, South McAllister.  
GRIEVANCE: T. T. Pyle, Eufala; C. H. Thomas, Chicotah; J. B. Harrison, Afton.  
INSURANCE: Thos. Hamm, Salisow; Chas. Hunt, Vinita; R. H. Muzzy, Centralia.



### Resolutions.

The following resolutions were adopted:

*Resolved*, That we as retail Hardware, Implement and Vehicle dealers, in our third annual convention assembled at Vineta, I. T., declare ourselves opposed to trusts and favor wholesale dealers who are not in such combinations and who protect the interest of the retail dealer; that a copy of this resolution be mailed to all of the wholesale dealers in this section of the country.

*Resolved*, That we extend our sincere thanks to the past officers for the work so ably performed in the interest of this association for the past year.

*Resolved*, That we thank the dealers of Vineta for the royal entertainment which we have so much enjoyed since in their city, and for the elaborate banquet served by them.

The meeting then adjourned *sine die*. After adjournment the delegates enjoyed a tally-ho ride around the city as the guests of E. C. Stretch.

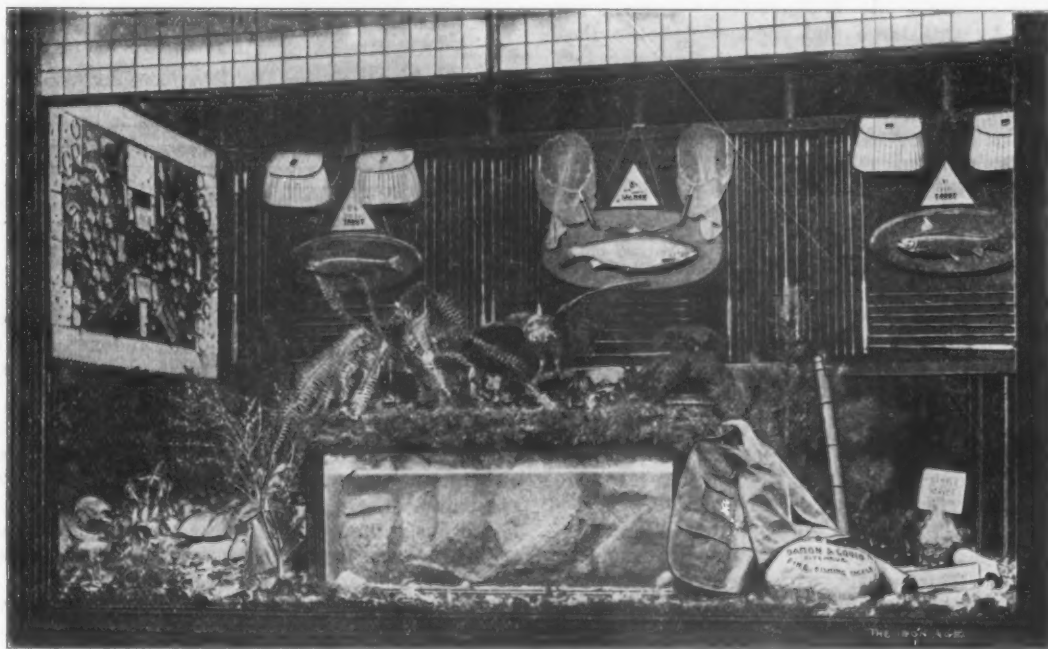
### H. D. HULL'S FIFTIETH ANNIVERSARY.

ON the 13th inst. H. D. Hull, wholesale and retail dealer in Hardware, Stoves, House Furnishing Goods, Farming Tools, &c., Troy, N. Y., completed his fiftieth year of mercantile life. Mr. Hull, who was recently elected president of the newly organized New York State Association of Retail Hardware Dealers, is now in

### A FISHING TACKLE WINDOW.

A VERY clever idea in window attraction, and one of the best ever used to advertise Fishing Tackle, has been introduced by Damon & Gould Company, Fitchburg, Mass. Since moving into their new store about a year ago this concern have made a special effort to secure the Sporting Goods trade. Their store is large and the firm carry a good stock of all sportsmen's supplies. The company realize that window display is good advertising cheaply bought, and as their Hardware business is well established, they are devoting the window decorations to advertising the other lines which are carried by them.

In the center of the window, which is about 15 feet long and about 5 feet deep, with mirror back and ends, is a tank 5 feet long, 2 feet high and 2 feet deep, with a glass front. The back of the tank is filled with granite, which makes a good background for the two dozen live trout in it, which weigh from  $\frac{1}{2}$  to  $\frac{3}{4}$  pound each. The tank, of course, is provided with running water. On and around the tank are placed moss, ferns, &c., and the floor of the window is covered with pine needles and leaves from the woods. At the back of the window, above the mirrors, a mounted 8-pound land locked salmon was placed in the center with mounted square



A Fishing Tackle Window.

the seventy-second year of his age. During his long and successful career he has witnessed many changes in trade, of which he writes as follows:

What changes have taken place in my small sphere in the one-half century which I have been permitted to do business! Scarcely a man now doing business in this town who was then here and active. Either gone to their reward beyond the flood, where all must eventually go, or have taken Horace Greeley's advice, "Go West, young man."

The manner of doing business has also greatly changed. Time was when each department of business had its own legitimate channel, and each person in business attended to his own affairs and all were happy and content. Each could make a good living, and customers were more content than now. Now all is changed. Trusts are being formed, even in the very necessities of life.

Again, large stores are springing up, using goods which do not belong to their department of business, and cutting the very life out of them, in numerous cases having only samples to attract, and if a customer should ask for a quantity their reply would be, "We are just out." The retail dealers' associations hope in time to relieve this situation and teach the people they can buy the same goods directly through the regular channel and not from illegitimate sources at equally as low prices and run no chances of getting swindled.

talled trout on each side, around which Rods and Fish Baskets were arranged in quite an effective way. On the wall at the end of the window is a display of Fish Lines, Reels, Flies, Spoon Hooks, Ingersoll Watches, &c.

The aquarium is so placed that it is about even with the range of vision from the street. One can thus get a side view of the fish as they swim about in the tank. A fisherman, of course, would be attracted and could not see such a display without feeling the longing to go fishing. Mr. Gould, who is an enthusiastic sportsman, developed the scheme. The window was fixed up with no little trouble, but he felt that it was exceedingly good advertising and would sell goods for them.

Besides Hardware and Mill Supplies and in addition to Sporting Goods, the Damon & Gould Company carry complete lines of Crockery and House Furnishing Goods, Silver Ware, Clocks and Plated Ware.

B. E. Ulmer has sold out his Hardware business in Middletown, Pa., to C. Ober, who has made improvements in the store which have added very much to its convenience and attractiveness. Mr. Ober has also enlarged the stock of Builders' and Shelf Hardware.

## SIMMONS HARDWARE COMPANY'S WANT BOOK.

**S**IMMONS HARDWARE COMPANY, St. Louis, Mo., issue a Want Book of nearly 270 pages, in the arrangement of which the suggestions of their Hardware customers have been followed. Three pages at the front of the book are devoted to suggestions relating to mail orders. Following these are 221 ruled pages blank on both sides, on which mail orders may be written. These are perforated along the inner edge so that they may be torn out and used for mail orders. At the top of each of these pages reference is made to some of the goods handled by the company. At the bottom of each left hand page is the following motto, which the company have adopted: "The recollection of quality remains long after the price is forgotten." At the bottom of each right hand page are wise sayings and business suggestions. Twenty-three pages at the back of the book give useful information as to lists, weights and measures, postage rates, &c. In addition to the company's general Hardware catalogue, containing 1992 pages, they issue a number of others relating to special lines. Miniature cuts showing covers of 42 such catalogues are given in the Want Book. Any of these catalogues will be furnished on application. The variety of goods which are thus treated as legitimate for the Hardware trade to handle is suggestive. Among the lines carried by this large and successful house that are not yet commonly handled by retail Hardwaremen the following may be mentioned: Baby Carriages, Baskets, Beds, Clocks, Harness, Lamps, Plated Ware, Rubber Goods, Seals, Sewing Machines, Lumber and Saw Mill Supplies, Ice Tools, &c. It may be remarked in passing that new lines, judiciously selected and well advertised, not only add to the merchant's profits, but also attract new customers to the store.

**LANDERS, FRARY & CLARK'S NEW CATALOGUE.**

**L**ANDERS, FRARY & CLARK, New Britain, Conn., and 82 Chambers street, New York, have just issued a very practical and convenient trade catalogue illustrating and describing the large and diversified line of goods which they manufacture. The book has flexible covers for quick reference, and is divided into two sections, there being 420 pages in all, each  $9\frac{1}{4} \times 6\frac{1}{2}$  inches. The first 208 pages relate to fine Table Cutlery and Butchers' Tools. This section, with its own separate index, is designated as Catalogue No. 19. In it are shown great varieties of Knives and Forks in various kinds of mountings, Carving Sets in cases, many of them very handsome, together with Orange, Bread and Butter, Lemon and similar Knives, Child's Sets, Nut Crackers and Picks, Bird and Game Carvers, Slicers, &c. The assortment of Butchers' Knives, Steels and similar goods, meets almost any requirement. There is also a comprehensive line of Shoe, Paper Hangers', Broom Corn and Cigar Knives, &c. The second section, Catalogue No. 20, 212 pages, treats of a large assortment of Hardware articles, among which are the Universal Food Chopper and Universal Meat Chopper, Stuffers, Coffee, Spice and Drug Mills, numerous kinds of House Furnishing and Kitchen Utensils, Scales, Cocks, Faucets, Bibs, Bright Wire Goods and Stationers' Hardware. The catalogue will undoubtedly meet the cordial approval of the trade as presenting the important lines of goods to which it relates in a businesslike and convenient manner.

## A WEEKLY STOCK REPORT.

**T**HE EMERSON ELECTRIC MFG. COMPANY, St. Louis, Mo., are the manufacturers of the Emerson Desk and Ceiling Fans. For the convenience of the Eastern trade, by which is understood the New England, Middle and Atlantic Coast States, they maintain a New York office at 136 Liberty street, with a warehouse at 54 West street, for the season, approximately six months from May 1 of each year. To facilitate order-

ing they have adopted a four-page weekly stock report, which is sent regularly to every one on their mailing list, showing the stock of fans on hand at the close of every week. This enterprising method enables a buyer to order from New York if he can, or more advantageously from the factory if he must, without unnecessary loss of time.

## THE CARE OF PRICES, QUOTATIONS AND CATALOGUES.

**T**HE system below described for the taking care of prices, quotations and catalogues has been satisfactorily used for two years by the buyer of a manufacturing company, who is brought in contact with a largely diversified line of goods:

### Former Methods.

Before adopting this system prices were kept in a book and catalogues were packed away in drawers. The price book was an exasperation because of its inflexibility. To find a catalogue regular work had to be neglected for a period varying with the success in finding

Northern Screw Co Detroit Mich. 223  
T. R. Jones Century Bldg. City  
Screws 1/2" x 1/2" 65% 1/4" x 1/2" 30% 7/8" x 1/2" 5%  
1/2" x 1/2" 10% 7/8" x 1/2" 5%  
Screws 1/2" x 1/2" rolled 60% 1/4" x 1/2" 30%  
Nuts 1/2" x 1/2" 70% 1/4" x 1/2" 30%

*Fig. 1.—Price Card. Size, 3 x 5 Inches.*

the catalogue required. This system was replaced by a new one, that includes two card indexes and a catalogue case, which are shown in the accompanying illustrations.

## The Indexes.

One card index is made up with a card for each firm, on which the articles manufactured or handled by them are listed. These cards, one of which is shown in Fig. 1, are designated price cards. At the top of each card the firm's name with their home address is written, also the name and address of local representatives, if any, and in the upper right hand corner a number. The same number is afterward written on the firm's catalogue in the upper right hand corner. In the body of the card are listed the different articles manufactured or handled by the firm, and opposite each is noted the latest price or discount, terms, &c., with the date of the quotation. Should the price have been named by letter a

Screws - hex cap

Waltham Mfg. Co.  
Northern Screw Co. ←  
Jac. J. Smith Co.  
Newton Jones & Co.

*Fig. 2.—Article Card. Size, 3 x 5 Inches.*

small "1" is put after the date. If the price was given verbally the letter "v" follows the date, or if received by 'phone the letter "p." This memorandum is valuable in case of possible dispute or misunderstandings.

The other index contains cards headed with the name of each article, and on these are written the names of the firms selling it, as shown in Fig. 2. A check mark



is placed against the firm's name whose prices in hand are the most attractive or from whom the last purchase was made. These cards are called article cards.

Both kinds of cards are placed in suitable boxes kept in drawers in the buyer's desk, each index being in a separate drawer. The boxes are placed in the drawers extending from side to side, so that the cards face the user when the drawers of the desk are opened.

#### Catalogue Case.

The catalogue case, shown in Fig. 3, contains four drawers, each 24 inches deep and 21½ inches wide. The case is about 32 inches deep, 28 inches wide and 38 inches high over all. The drawer designed for the small-



Fig. 3.—Catalogue Case.

er size of circulars, folders, &c., up to about 4 x 6 inches in size, has a stationary partition running through the center from front to back, with movable partitions on each side of the stationary partition. Thus the drawer is divided into four compartments. The next two drawers are divided into compartments suitable for medium sized catalogues, and the fourth drawer is arranged for comparatively large catalogues. Thus the case accommodates printed matter ranging from folders 2 x 4 inches in size to 9 x 12 inch cloth bound volumes.

Numbered guide cards are provided, as shown in Fig. 4, made of heavy tag stock. The object of the guide cards is to facilitate finding and replacing any catalogue.



Fig. 4.—Guide Card. Size, 4¼ x 6¾ inches.

The pamphlets and catalogues are placed vertically in the drawers, in numerical order, half a dozen or more of the former between each card, according to their thickness. Hardware jobbers' large catalogues are kept on a shelf, and no attempt is made to index articles handled by large Hardware or supply houses.

#### Using the System.

When it is desired to look up some article the article index is referred to, and from this is obtained the names

of the different firms manufacturing or handling it. From the price index, cards of each of the firms may be picked out, their prices compared, and, if desired, their catalogues may be selected.

#### Advantages.

The flexibility of card indexes and the ease with which useless matter can be eliminated are advantages too generally recognized to be enlarged upon. It may be pointed out, however, that the arrangement of catalogues in cases economizes space to a remarkable degree. The benefit of the full depth is secured, so that there is practically no waste room, while the amount of literature that can be accommodated is large. While the case described is not full, it contains in the neighborhood of 1500 pieces of printed matter.

#### A Suggestion.

To any who may contemplate installing a card system, and who are not familiar with card indexes, it is suggested that the best quality of cards and guide cards be purchased. When they are frequently used even the best are none too durable, and the slight expense over poorer ones is insignificant compared with the time and trouble incident to recopying the matter on the cards.

### POUND-KILO REFERENCE TABLE.

THE continually increasing need of manufacturers and others of a comparative table giving the equivalents in kilograms (metric system) of pounds avoirdupois in the preparation of orders for export shipment, has led Charles B. Corwin, 15-25 Whitehall street, New York, manufacturers' export representative, to issue such a schedule gratuitously to any who choose to ask for it. The schedule is printed on a sheet of linen paper, 9½ x 8½ inches, of sufficient size to allow using large, well spaced figures which can be easily read. It will be remembered that with few exceptions the majority of foreign countries are using the metric system and in most orders for export the weight in kilos is obligatory. This sheet is designed for ready reference by shipping clerks and others having use for it, and being printed on but one side can be pasted on a board to hang if used in a packing room. Mr. Corwin refers to the table as undoubtedly correct, having been verified many times. We give below the principal part of the table, omitting the sixth double column, which gives the kilo equivalents of 200 to 20,000 pounds inclusive:

#### Pounds and Kilograms.—Comparative Table.

Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.
1...	0.452	21...	9.50	41...	18.55	61...	27.59	81...	36.64
2...	0.905	22...	9.95	42...	19.00	62...	28.04	82...	37.09
3...	1.357	23...	10.40	43...	19.46	63...	28.50	83...	37.54
4...	1.809	24...	10.86	44...	19.91	64...	28.95	84...	38.00
5...	2.262	25...	11.31	45...	20.36	65...	29.41	85...	38.45
6...	2.715	26...	11.76	46...	20.81	66...	29.86	86...	38.90
7...	3.167	27...	12.22	47...	21.26	67...	30.31	87...	39.35
8...	3.618	28...	12.67	48...	21.72	68...	30.76	88...	39.80
9...	4.072	29...	13.12	49...	22.17	69...	31.22	89...	40.26
10...	4.525	30...	13.57	50...	22.62	70...	31.67	90...	40.71
11...	4.977	31...	14.03	51...	23.07	71...	32.12	91...	41.16
12...	5.430	32...	14.48	52...	23.52	72...	32.67	92...	41.61
13...	5.882	33...	14.93	53...	23.98	73...	33.02	93...	42.06
14...	6.334	34...	15.38	54...	24.43	74...	33.48	94...	42.52
15...	6.787	35...	15.84	55...	24.88	75...	33.93	95...	42.97
16...	7.239	36...	16.29	56...	25.33	76...	34.38	96...	43.42
17...	7.694	37...	16.74	57...	25.78	77...	34.83	97...	43.87
18...	8.143	38...	17.19	58...	26.24	78...	35.28	98...	44.32
19...	8.595	39...	17.65	59...	26.69	79...	35.74	99...	44.78
20...	9.050	40...	18.10	60...	27.15	80...	36.20	100...	45.25

1 kilogram equals 2 1-5 pounds.

Do not put fractions of kilos on invoices or on packages; that is, discard a fraction of a kilo which is less than half a kilo, and regard a fraction greater than half a kilo as a whole kilo. Thus, 42.43 equals 42 kilos, and 42.63 equals 43 kilos.

MAYER & Co., Philadelphia, Pa., advise us of very extensive shipments of Gold Medal Files to the Middle West and the Pacific Coast. A number have also been shipped for export to Mexico. The various improvements to their plant have been completed and machinery, &c., is now being installed. Mayer & Co. are also locating an office in New York City. B. K. Liveright, a member of the firm, will be in charge of the new office.

## TRADE ITEMS.

ALLENTOWN HARDWARE MFG. COMPANY, Allentown, Pa., have recently purchased the Allentown Brass Foundry, the Allentown Nickel & Brass Works and the Standard Electro Plating Works of that city. They are putting on the market Refrigerator Hardware, Bar Rails, Cash Register Parts, Door Pulls, Door Sills and Machine Plates. They are also in a position to do both light and heavy brass, bronze and aluminum casting, as well as brass, copper and nickel plating and finishing.

P. T. PRATHER of Dallas and L. W. Ward, formerly of the firm of Ward Bros. of El Paso, have entered the manufacturers' agency business in Dallas, Texas, under the style of P. T. Prather Company. They will represent manufacturers of Hardware for the jobbing trade of that State. The members of the firm have been in the East making a tour of factories, and are about to return to Texas.

THE CARBORUNDUM COMPANY, Niagara Falls, N. Y., who make a specialty of all kinds of Sharpening Stones generally carried by Hardware dealers, have gotten up what they call a Carborundum Display Case for the display of Carborundum Sharpening Stones, Hones, Knife Sharpeners, Whetstones, &c. This is a very attractive case, made of quartered oak, the upper part for display and the lower part for the storing of stock. The company are prepared to furnish it practically free of cost and invite the trade to write for their proposition.

HERMANN BOKER & Co., 101-103 Duane street, New York, importers of foreign Hardware and Cutlery, as well as dealers in many domestic products, some of which they manufacture here themselves, have taken new quarters of a temporary character at 143-145 West Broadway, near Thomas street, where they are carrying on business as usual. This is owing to the fire to which reference was made in these columns a short time since.

E. P. BELLOWES AGRICULTURAL COMPANY, manufacturers of and dealers in Agricultural and Horticultural Implements and the numerous supplies needed for farm and garden, &c., have recently moved from 165 Greenwich street, near Cortlandt street, to 70 Cortlandt, but a block distant, where they have the entire building. These are the same premises formerly occupied by H. B. Griffin, in the same line of trade, and with whom Mr. Bellows was identified from 1876 to 1894, the business having been established in 1850. The street floor is reserved for sampling and selling goods and office purposes, the remainder of the building, basement and three upper floors, being utilized for storing stock.

NEW DEPARTURE MFG. COMPANY, Bristol, Conn., whose entire product is marketed by John H. Graham & Co., 113 Chambers street, New York, have just published a unique and handsome illustrated catalogue, mainly devoted to the New Departure Bicycle Coaster Brake, although the Security Cyclometer and New Departure Bicycle Bells also have a place in it. Through an oval aperture in the decorated cover is a vignette view of "Hiram Jones," eight full pages following being occupied with humorous illustrated sketches showing how this Rube came to adopt the Coaster and Brake as an accident preventive.

THE factory belonging to the Etzold-Nahrwald Washing Machine Company, Fort Wayne, Ind., is reported to be about ready for active work. The equipment is being installed and the wood working tools are already in place. The first shipment of the product of the factory will be a quantity of machines for consignment to New York City.

THE HARDWARE BOARD OF TRADE, 4-6 Warren street, New York, have passed the quarter century mark of their establishment May 1, 1877. A dominant feature of the business is the collection of accounts and speedy arrangement of settlements with delinquent debtors at a minimum expense to the members, who are representative concerns in the Hardware trade. We are advised that 92 per cent. of all claims submitted last year were settled. The officers are: President, Robert Sickels; secretary and treasurer, John L. Varick, the remainder of the Board of Directors being William Bishop of P. & F. Corbin, Frank C. Jennings, Bruce & Cook, and Henry L. Freeland, all of New York.

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## NOTES ON FOREIGN TRADE.

### BRITISH LETTER.

Office of *The Iron Age*, HASTINGS HOUSE, {  
NORFOLK ST., LONDON, W. C. }

#### The Week's Hardware Trade.

THE feature of the week has been a certain increased energy in all the factories and warehouses to finish orders off before the Whitsun holidays. On the other hand, orders are scarce and the future is not particularly hopeful. A certain number of orders from London factors have been received for domestic Hardware and kitchen utensils in anticipation of a large gathering of visitors for the forthcoming coronation. The increased demand for metallic Bedsteads may perhaps be traced to the same cause, but the trade is suffering from injurious competition and has for the time being ceased to be remunerative. The overseas account is, if anything, slacking off. Australia still buys in good quantities, but the South American trade, with the exception of Brazil, is below the average. Indents have been received from China and Japan during the past few days of a far more encouraging nature, but, on the whole, the prospects in the far East are not particularly hopeful. There is a distinct slump in silver goods, which doubtless has direct relation to the fall in the standard price of silver, which is at the present moment 1 shilling 11 pence per ounce, said to be the cheapest price on record. The fluctuations in the price of silver, so far as the Sheffield trades are concerned, during the past 20 years indicate clearly the difficulties which the manufacturers of silver goods have to contend with. The average price per standard ounce in the London market in 1870 was 5 shillings ½ penny. For the next two years it remained above 5 shillings per ounce. In 1873 the average price was 4 shillings 11¼ pence per ounce. Then year by year it continued to drop until in 1899 the average was 2 shillings 2 15-16 pence. In each of the next two years quotations recovered about 1 penny an ounce. Eighteen hundred and ninety-seven was another year of fluctuation. The year opened with the price at 2 shillings 5½ pence, and each month it continued to drop until August, when it touched 2 shillings 15-16 penny. It is on record that early in August, for some reason difficult to trace, a sudden panic seemed to seize the market. Speculation, which had become a feature, held off from buying, while America pressed sales. The result was that within three weeks bars fell by rapid steps from 2 shillings 3 3-16 pence to 1 shilling 11¼ pence per ounce on August 25, the lowest price ever reached up to that time.

#### The Tin Plate Trade.

The tin plate trade is still doing remarkably well, all the mills being fully occupied and orders in hand are calculated to keep things going till the end of June. In some cases delivery cannot be expected until August. Buyers of tin plates are, however, at the moment fairly well stocked, and as long as the American market continues brisk they do not fear for the near future. At the same time there is a feeling over here of distrust in regard to the markets of the United States, while two or three nasty smashes on the New York Exchange do not tend to reassure.

#### The Metal Trade in Japan.

Reference above to Japan reminds me that the difficulty over there is that very low prices now rule, whereas Japanese importers are heavily stocked with material purchased when prices in Europe and America were at least 30 per cent. higher than they are now. The result, of course, is very depressing. Manufacturers of Wire Nails and exporters of Wire Nails to Japan will note that the Yasuda Wire Nail factory in Tokio, which was destroyed by fire in 1900, has now been rebuilt and is once more in working order.

#### American Agencies in England.

During the past few weeks I have received between 40 and 50 letters from various American exporters expressing a desire to be put in touch with suitable British agents who could handle their goods effectively. I have

not written individually to the firms in question, but a considerable proportion of them will have heard from me indirectly. A fortnight ago I sent out invitations to about 30 gentlemen interested in the American metal trades, requesting them to call at this office and examine these letters for themselves. Most of them have already called and have carefully analyzed my American letters. Almost without exception these welcome visitors discovered some line of goods indicated in the letters which they thought they could handle, and they are themselves writing to America with a view of getting into personal touch. While those whom I have consulted over here are perfectly willing and even anxious to handle marketable American goods, yet there is a marked indisposition just now to commit themselves too far, because, as they inform me, in nearly every case where they have accepted agencies and made sales they could not obtain supplies. I would most earnestly recommend any American exporters who are discussing terms with possible agents to be perfectly candid as to whether they can meet immediate demands or not. One agent whom I had introduced to an American house came in this week to tell me that he had come to an agreement, but he was given clearly to understand that there was no use pushing the trade until a little later in the year, by which time the American house hoped to clear off home orders and so be in a position to supply the foreign market. This is a businesslike way of doing things. The English agent knows when he may offer goods for delivery, and in the meantime is making arrangements to popularize the samples and only accepting orders on forward account. It is recognized by everybody, of course, that trade in the United States is at the present time active and healthy, and therefore no immediate business is expected to be transacted. But when an American house appoint an agent and by implication ask for orders to be sent on and they are not filled promptly, only irritation and disappointment result.

### AUSTRALIAN NOTES.

FROM A SPECIAL CORRESPONDENT.

GENERAL ironmongery business has only been moderately good of late, the poorness of the recent harvest, which utterly failed to anything like fulfill expectations, being largely responsible for trade deficiencies. Recent rises in the price of bread and the dearth of other items of food lead to the expectation of a very quiet winter. The state of the wheat market is well illustrated by the unloading of the ship "Iredale," which was ready to sail to an English port. The cargo was sold to better advantage in the Sydney market, and fresh employment has to be found for the ship. The shippers made a profit even after providing for the loss through the cancellation of the charter. Builders' Hardware has been in good demand the past two months, but a falling off in this, as winter approaches, is inevitable. The population of the city has increased considerably, although unfortunately this has been at the expense of the country districts, and now numbers 500,000, almost half the population of the State of Victoria.

Wire Netting has been in considerable demand at £20 for 37-inch x 1½ x 17 G. in trade lots.

#### Interstate Shipping Trade

is depressed, and in order to meet the decline in traffic fares and freights have been advanced. Foreign companies running regular services along the coast on their way to and from Europe compete keenly against the local shipping concerns, and seem to secure the cream of the trade.

The application of navigation laws, such as those obtaining in America, would benefit Australian shipping interests, and would perhaps call into being that hitherto almost unknown quantity—the Australian seaman.

#### New York to Australia Freights

It is somewhat curious to note the increased freights agreed upon by the three steamship lines running between New York and Australia at a time when depression in trade out here is pretty general on all hands. The additional charges are likely to handicap your export trade in favor of European orders, and this would

means loss of freight to the steamers, which will not be made up by the higher charges obtained. Possibly this may be the very best thing to force something like uniform rates, as it is to be noted that the mammoth cargo steamers of the White Star Line are not in the agreement, and it would surely pay them to carry general cargo from New York to Australia via Liverpool at less than 35 shillings a ton, the new rate now agreed upon. They are fitted with every facility for the rapid handling of cargo, are each of 12,000 tons, and run here regularly once a month. It is to be hoped they will prove a factor to be reckoned with when the direct service springs these little increases upon us. The new agreement is from March 1 and 13, and dead weight, such as rails, &c., is chargeable at 22 shillings 6 pence a ton; Fencing Wire at 17 shillings 6 pence, and Barbed Wire at 25 shillings a ton weight. It is an unfortunate time to increase Australian freights, and outside competition would be gladly received.

#### Tariff Alterations.

The Federal Government have recommitted various lines, and the latest alterations to date as regards the Hardware trade are as follows:

**GALVANIZED IRON, PLAIN AND CORRUGATED**, has had a duty of 15 shillings per ton reimposed. The Government's original proposal was a duty of 15 shillings per ton on Plain and 30 shillings on Corrugated, but decided in committee to free list both. Now a 15 shillings duty goes on in the interests of local industry.

**MINING MACHINERY** has been reduced from 20 per cent. to 15 per cent. The original proposal here was for a 25 per cent. duty. The reduction was largely due to a petition from British investors in West Australian mines. Local engineers, who certainly can do excellent work in this line, should find 15 per cent. a very fair measure of protection.

**KEROSENE OIL** has had the duty of 3 pence per gallon taken off in response to popular demand, and is now duty free.

**REAPER AND BINDER TWINE** has been reduced from 8 shillings to 5 shillings per hundredweight.

**FUSE** has been reduced from 1 shilling per coil, and made duty free.

**SPORTING POWDER** has been reduced from 4 shillings per pound, and made duty free.

**EXPLOSIVES**, n.e.l., have been reduced from 1 shilling per pound, and made duty free.

**CYCLE PARTS**, n.e.l., including Steel Bars for the manufacture of Rims, from 15 per cent. to 10 per cent.

**CLOTH, MADE WATERPROOF** with India Rubber, from 20 per cent. to 15 per cent.

**ENGINES**.—Gas and Oil Engines, High Speed Engines and Water and Steam Turbines are reduced to 15 per cent. from 20 per cent. for the two former, and 25 per cent. for the latter.

**PORCELAIN FITTINGS**, including Lamp Holders, except switches over 4 inches in the base; Integrating Watt Meters for distribution purposes; Insulating Tapes, Meters, Arc Lamps, Resistance Coils, Calking and Chipping Tools, Rock Boring Percussion Drills, Rheostats and Terminals, Static Transformers and Glass Cells used in connection with storage accumulators are added to the list of special exemptions, duty free.

**MACHINES**.—Beveling Glass Machines for Glass making and garment drafting machines are to be duty free. Formerly 20 per cent.

**MACHINE TOOLS**, formerly 15 per cent., are now duty free as regards the following: Machines for making metallic capsules, as metal working machines; Standard Iron Frame Plate Glass Polishers, Punching and Shearing Machines.

**SHIPS' FITTINGS**—viz., Propellers, Blades and Bosses, Liners for Cylinders, Shafting, Winches, Windlasses, Steering Gear, Feed Water Heaters, Feed Pumps, Evaporators and Auxiliary Condensers, provided such Fittings form duplicate parts of and are used in connection with the ship in or for which they are imported, duty free, instead of 15 per cent.

**STEEL AND STEEL RIM WHEELS** for coal or shale trucks and wagons, duty free, instead of 15 per cent.

**FISH BOLTS** to carry 15 per cent. henceforward.

**POLISHED PLATE GLASS**, each plate not exceeding 7 superficial feet, per 100 superficial feet, 5 shillings; exceeding 7 superficial feet and not exceeding 12 superficial feet, per 100 superficial feet, 7 shillings 6 pence.

**BOILERS, PUMPS, MACHINES AND MACHINERY**, n.e.l., hitherto 20 per cent., henceforward 15 per cent., with the following special exemptions duty free:

Machine Tools, wood working; Cask Making Machines—viz., Rounding and Beveling, Combined Hoop, Punching, Shearing, Splaying and Binding, Hoop Splaying and Binding, Stave Jointing, Chiming, Crozing and Doweling. Machine Tools, metal working, Hydraulic Wheel Presses. Machine Tools, harness, saddlers' and bag makers', as follows: Strap Cutting, Riveting, Creasing, Stitch Pricking, Trace Trimming Machines and Presses and Dies for Loops.

**VEHICLES AND PARTS THEREOF**, n.e.l., 20 per cent., to which must now be added Wheels, tired and bolted; Bodies, Under Gears, Under Carriages, Tops.

**TANKS**, formerly 3 shillings per 100 gallons, now duty free.

**CEMENT**, 1 shilling per hundredweight, reduced to 9 pence.

**GLASS WARE**, 8 pence per cubic foot and 15 per cent., has been altered to an all round duty of 20 per cent.

**BOATS, LAUNCHES AND YACHTS**, from 20 to 15 per cent.

**BARBED WIRE**, from 20 to 10 per cent.

**AXLES AND SPRINGS**, from 25 to 15 per cent.

**SCREWS**, 25 per cent., now free listed.

**EARTHEN WARE**, 6 pence per cubic foot and 15 per cent., to an all round 20 per cent.

**ENGINE PACKING**, formerly free, now 20 per cent.

**BICYCLE TUBING AND FORK SIDES**, including Bent Tubes, not brazed or plated, from 10 per cent. to free list.

**UNPLATED PARTS**—viz., Ball Heads, Bottom Brackets, Lugs, Fork Ends, Bridges, Sprocket Wheels, Balls, Nipples, Spokes and Washers—to carry 10 per cent.

All tariff matters have yet to go before the Upper House, but it is not expected that any material alterations will be made there.

The Melbourne Hardware trade is the poorer by the recent death of John Danks, head of the house of John Danks & Son Proprietary, Limited, of Melbourne and Sydney, perhaps the leading Australian firm in the Brass Foundry and Plumbers' Supplies trade. Mr. Danks, who was in his seventy-fourth year, remained associated with the business to the end, although the more active part has of late devolved upon his son, Aaron T. Danks, who now assumes chief control. The late Mr. Danks was of benevolent disposition, and during his lifetime a man who took great interest and held office in municipal affairs. His son is one of hardest working men in Melbourne, and the firm must rank as one of the wealthiest and most important Hardware concerns south of the line.

John Pender, a manufacturer of Horseshoe Nails and one of our most enterprising citizens, will be in New York about the same time as this letter. He is on a business trip and, like the Athenians of old, is always seeking something new. Improved machinery and various other things are the objects of his visit. He reads *The Iron Age*; so those who wish to do business with him will know how to find him.

#### OIL STONES.

**THE PIKE MFG. COMPANY**, Pike Station, N. H., and New York, have issued a booklet treating of Oil Stones, their selection, use and care. The purpose of the booklet as set forth in the introduction is to disseminate a better knowledge of Oil Stones among tool dealers and users. It is remarked that while the Oil Stone line is not a large item in the stock of any Hardware house, yet it is a very important one, inasmuch as the successful use of all Edge Tools depends very largely upon proper sharpening. The company are supplying these booklets in any desired quantity, free of charge, to all dealers, whether customers of theirs or not.



### THE READING HARDWARE COMPANY.

**T**HE READING HARDWARE COMPANY, Reading, Pa., have just issued price-list No. 5, applying to their 1897 catalogue, which is a decided departure from the former price books issued by the company. The book contains 120 pages, indexed through. The general Hardware is arranged in alphabetical order and all the numbers under each head are arranged numerically. The advantages of this method can be seen when it is considered that the one item of Bolts covers nearly 15 pages in the price-list, embracing a variety of nearly 800 numbers and sizes, any of which can be found in a few seconds. This is equally true of Butts and many other lines. In short the book is arranged in such a way that the price of any article included in the company's large line can be referred to in the price-list instantly without previously consulting the catalogue. The type is clear and distinct, all numbers being in heavy face type, with ample room between the columns for inserting any changes in prices that may occur. The company are to be congratulated upon issuing so comprehensive a book of prices.

### STOWELL MFG. COMPANY'S PREPARED ROOFINGS.

**S**TOWELL MFG. COMPANY, 114-134 Culver avenue, Jersey City, N. J., manufacturers of Roofing Materials, have just added an entirely new covering material to their regular lines of such Roofings, which will be known as Mica-Slate Roofing. It consists of a single ply of high grade double thick asphalt saturated felt, the top surface of which is also covered with asphalt and a combination of mica and slate ground together, which makes an especially suitable roof covering. An important feature of it is the comparatively low price at which it is sold, which in effect is about the price of ordinary three-ply coal tar roofing felt, nails and caps being included in the price of the Mica Slate Roofing. Aside from the greater lasting qualities of asphalt treated felt, this Roofing is a finished product, so that the cost of labor to coat the three-ply tarred roofing is saved as well as the material for coating the surface.

A feature of the various Roofings made by this company is that nothing but genuine Trinidad asphalt is used for saturating, cementing and covering the various prepared Roofings, which are put up in rolls of 108 square feet (40 feet by 32 inches), technically known as a "square," and capable of covering 100 square feet net of surface, exclusive of laps. What is claimed for asphalt saturated felt is that it remains pliant and elastic for years, does not get brittle or crack, is odorless, and will give good results for two or three times the period that coal tar products do without recoating.

The company also make superior grades of asphalt saturated and coated ready Roofings, consisting of two thickness of felt cemented with asphalt, the coverings being gravel, cork and asbestos, the several kinds having distinctive features that commend them to the trade.

In this connection they also make an asphalt saturated Roofing Felt, Nos. 30, 40 and 60, single ply, to be used in the same way as coal tar coated paper with which it competes. This plant makes 50,000 square feet of ready Roofings of the kind described in a day's run.

In a separate factory nearby they have a paint making plant for producing absolutely pure Asphalt Paint, which is warranted to contain no coal tar in its composition. They particularly recommend it for painting metal roofs or covering old shingle roofs, smokestacks, iron bridges and iron or steel structural work generally. Another related product they manufacture is an Elastic Rubber Cement, which is used by tinners for flashing and by slaters for imbedding slate in the laying of a roof. They deal in No. 1 Refined Trinidad Asphalt, Trinidad Asphalt Roofing Cement and Trinidad Asphalt Paving Cement. The roofs of the great buildings of the Fore River Ship & Engine Company, Quincy, Mass., who are building several war ships for the United States Government (among which are the battle ships "New Jersey" and "Rhode Island"), are cov-

ered with the Gravel Prepared Roofing made by this company.

### THE BEVIN BROS. MFG. CO.'S CATALOGUE.

**T**HE BEVIN BROS. MFG. COMPANY, East Hampton, Conn., manufacturers of Bells for the Saddlery and Hardware trade, have issued an illustrated catalogue and price-list, No. 76, containing 111 pages. This is devoted to Body Strap Sleigh Bells, Shaft and Saddle Chimes, Horse Bells, Team, Turkey and Cab Bells, Hand, Tea and Call Bells, Cow and Sheep Bells, Gongs, Ship and Factory Bells, &c. The company have increased their line of Body Strap and Shaft Chimes, and have added Steel and Swiss Cow Bells.

### AMONG THE HARDWARE TRADE.

B. W. Crone has bought the Hardware and Stove business of W. J. Ohlheiser, at Juniata, Neb., and will continue at the old stand.

James Alexander, dealer in Hardware, Farm Implements, Stoves and Buggies and Wagons, Orchard, Neb., has lately moved into a new building.

J. D. Moore has been succeeded in the Hardware, Agricultural Implement and grocery business in Bay City, Texas, by Moore & Collins.

D. A. Utiger is successor to Mackay & Utiger in the Hardware Stove and Farming Implement business in Mena, Ark.

John Eilerts has lately opened a store in Charlestown, O. T., handling Shelf Hardware and Tinware.

Hoy and Schroeder, Hardware dealers, Postville, Iowa, have been succeeded by Schroeder & Stone. The firm are dealers in Shelf and Heavy Hardware, Tinware, Sporting Goods, Stoves and Furnaces, Plumbing and Gas Fitting Supplies, &c.

Morse Hardware Company, wholesale and retail dealers in Hardware, Ship Chandlery and Metals, Stoves, Sporting Goods, Iron and Steel, Mining, Mill, Fish Cannery and Lumbermen's Supplies, Lime, Cement, &c., Whatcom, Wash., are about to erect a new building, which will have a frontage of 56¼ feet and a depth of 115 feet, with three floors, including basement. The establishment will contain all modern improvements. A railroad switch directly in the rear of the building will enable them to unload from car to basement floor. The constructing material will be of a fine grade of sandstone and hard brick. The steady growth of their business has compelled the company to erect this building, which will fully double their present floor space. The present quarters will in the future be used as the wholesale department.

W. W. Luebkehan has lately embarked in business at Eau Claire, Wis., handling a line embracing Shelf and Heavy Hardware, Stoves and Tinware, Sporting and Athletic Goods, Mill Supplies, Paints, Oils, &c. Mr. Luebkehan will conduct both a wholesale and retail business.

Albert P. Janney, Hardware and Farm Implement merchant, Pasadena, Cal., has materially increased his facilities by leasing an 80-foot shop, which he will occupy for the balance of the year.

Geo. F. Johnson & Son have succeeded G. F. Johnson in the Hardware, Stove and Sporting Goods business in Redfield, S. D.

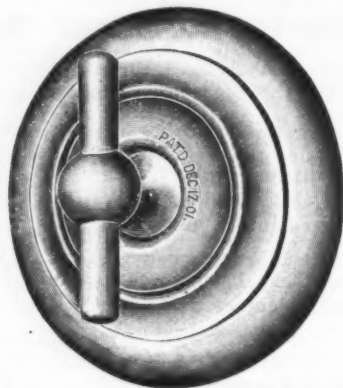
Webb Bros. have succeeded M. W. Webb in the Hardware, Stove, Agricultural Implement, Sporting Goods, Wagon and Buggy business in Itasca, Texas. In the fall the firm will build a Harness and Saddle factory.

### Fruit and Vegetable Presses.

The Fanner Mfg. Company, Cleveland, Ohio, have just begun the manufacture of Arctic fruit and vegetable presses. These are hand presses, and are made in two shapes. They are referred to as made of first-class material and well tinned.

### Sheet Metal Draft Register.

The H. A. Matthews Mfg. Company, Seymour, Conn., well-known manufacturers of stove trimmings, have recently put on the market the patented sheet metal draft register of which an illustration is given herewith. The threads are cut and the disk is securely fastened without cotter pins or washers and the register can be made



Sheet Metal Draft Register.

either loose or tight, as required. The company manufacture these registers in stock sizes— $2\frac{1}{2}$ , 3,  $3\frac{1}{2}$ ,  $3\frac{3}{4}$ , 4,  $4\frac{1}{2}$ ,  $4\frac{3}{4}$  and  $5\frac{1}{4}$  inches—but they are also prepared to make them in quantity in any other sizes.

### Fisherman's Knife.

The Holley Mfg. Company, Lakeville, Conn., are offering the knife shown herewith. The blade with the notched end is known as a disgorger, and is designed to be inserted in the mouth of a fish to loosen the hook swallowed by the fish and beyond the reach of the fish-



Fisherman's Knife (Reduced).

erman's fingers. It is referred to as a very simple and convenient contrivance. The knife has cocoa handles, iron bolster, bright steel lining and glaze finished blades.

Witte Hardware Company, Aberdeen, S. D., have been incorporated with the following officers: A. C. Witte, president; Otto E. Mueller, vice-president and treasurer, and Arthur L. Mueller, secretary. They are successors to A. C. Witte in the wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, &c. The company have built a two-story brick addition, 25 x 62 feet, and also a warehouse, 25 x 140 feet, thus adding materially to their facilities.

### The Brosi Galvanized Steel Washtub.

In addition to the regular line of galvanized wash-tubs, the Fred. T. Brosi Company, Quincy, Ill., are just placing upon the market the Brosi patented wood handle galvanized steel washtub, a view of which is given in Fig. 1. The washtubs are referred to as made of high grade steel sheets, thoroughly galvanized



Fig. 1.—Brosi Galvanized Steel Washtub.

They are furnished with heavy bail wood handles, as shown in Fig. 2. In fitting the handle to the tub no rivets are used, but the construction is such, it is stated, that it is practically impossible to tear the ball from the tub. The fastening used for this purpose is shown in Fig. 3. The handles are made of the best selected hard wood and are insured against splitting. By means



Fig. 2.—Handle and Attachment.



Fig. 3.—Patent Fastening.

of these handles the tub can be lifted with greater ease than tubs having rough iron or wire handles, which are apt to cut the hand.

### The Sun Dinner Pail Ear.

W. B. Bertels, Sons & Co., Wilkes-Barre, Pa., manufacturers of Sun dinner pails, one of which is shown in Fig. 1, have recently brought out a new ear, as shown in Fig. 2. The body of the ear is made of heavy sheet



Fig. 1.—Sun Dinner Pail.

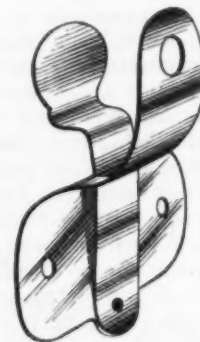


Fig. 2.—Spring Ear.

steel and tinned, and the spring of heavy spring brass. The manufacturers state that they have used different styles of ears in the past, but find this one the best of their production. Regarding the pails, we are advised that the latest improved machinery is used in their manufacture and that there is no hand work done on any pail except the soldering.



### Grand Rapids All Steel Noiseless Sash Pulley No. 12.

The accompanying cuts relate to all steel sash pulleys, recently added to their line by the Grand Rapids

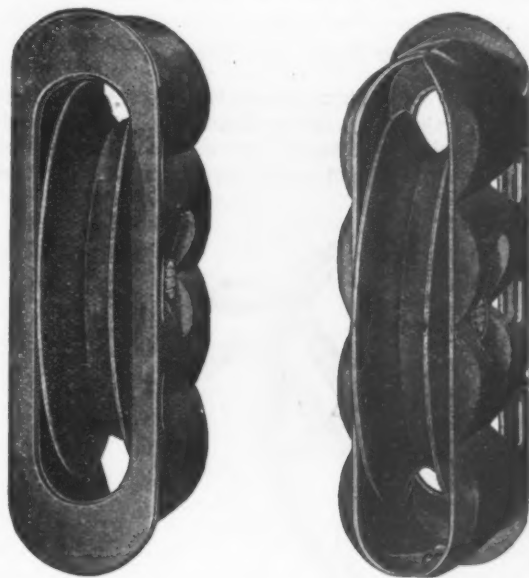


Fig. 1.—Grand Rapids All Steel Noiseless Sash Pulley No. 12.

Hardware Company, Grand Rapids, Mich. In Fig. 1 a front and back view of the pulley is shown, the pulley fitting either a four-hole or a straight side mortise. The

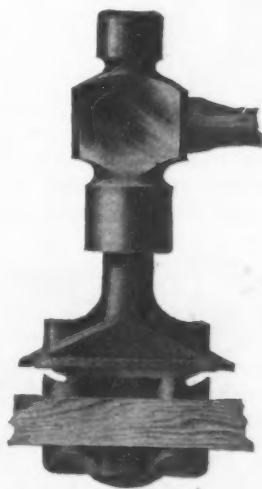


Fig. 2.—Driving Pulley into Mortise.

pulley is put into the mortise as far as it will go easily, when it is driven down flush with the surface of the jamb by the aid of the set, as shown in Fig. 2. The pul-

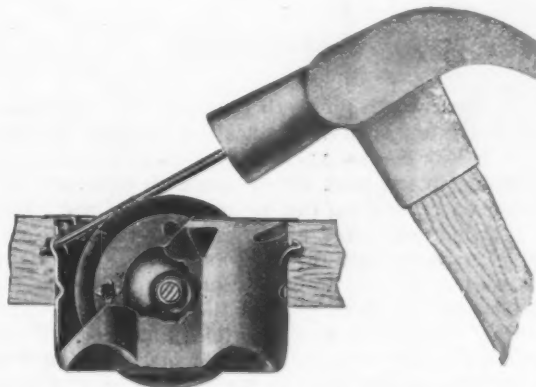


Fig. 3.—Fastening Pulley in Mortise.

ley is fastened in the manner illustrated in Fig. 3 by driving the end tongues into the wood  $\frac{1}{8}$  inch or so. No nails or screws are required to hold the pulley in place.

These pulleys are made with 2-inch wheels. The company refer to the pulleys as light, yet very strong, the wheels being so strongly laced together as to make it possible for the manufacturers to guarantee the pulleys to carry any weight a sash cord will support. It is stated that the polished steel wheel cannot wear or cut the cord. Particular attention is paid to the kind of bearing in the pulleys, each wheel, it is remarked, being fitted with a polished antifriction bushing running on a turned steel axle.

### Corrugated Sprinklers and Coal Hods.

The National Enameling & Stamping Company are offering a new line of sprinklers and coal hods, which are made at their factory at Baltimore, Md. In Fig. 1 is shown the improved corrugated sprinkler, made with stamped, seamless breast and zinc rose. The sprinklers are constructed of heavy sheet steel, galvanized after being put together, and greatly strengthened by corrugation. The stamped bent spouts are double seamed, and the body is supported by a heavy breast securely riveted. The strong top and back handles are wired,



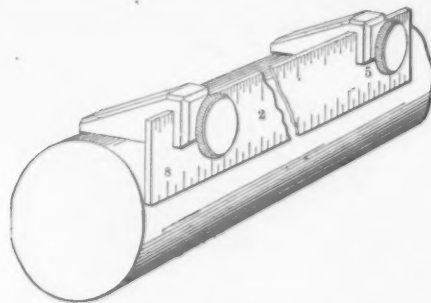
Fig. 1.—Corrugated Sprinkler.

Fig. 2.—Corrugated Coal Hod. 1

clamped and riveted in such a manner as to insure durability. The sprinklers are made in 4, 6, 8, 10, 12 and 16 quart capacity. The company also manufacture a line of plain galvanized sprinklers of similar size and capacity, but without corrugations. What is claimed to be a new departure in coal hods is shown in Fig. 2. The novel feature of this article is the corrugated body, bottom and foot, which the manufacturers claim makes the article much stronger and prevents it being easily dented. A special advantage of these hods is in pouring into the stove, as the coal passes out more freely and into a smaller opening without spilling than from plain hods. They are made from the best quality of sheet steel, with a double seamed bottom, and are 15, 16, 17 and 18 inches diameter. The company also make a line of corrugated hods provided with a japanned funnel.

### Key Seat Rule Blocks No. 27.

The Sawyer Tool Mfg. Company, Fitchburg, Mass., are offering key seat rule blocks, as shown in the accompanying cut. As the name indicates, the blocks are de-



Key Seat Rule Blocks No. 27.

signed to convert an ordinary rule into a key seat rule. They are used for key seating and various other purposes, such as setting calipers and dividers and various other tools. The method of attaching the blocks is shown in the illustration.

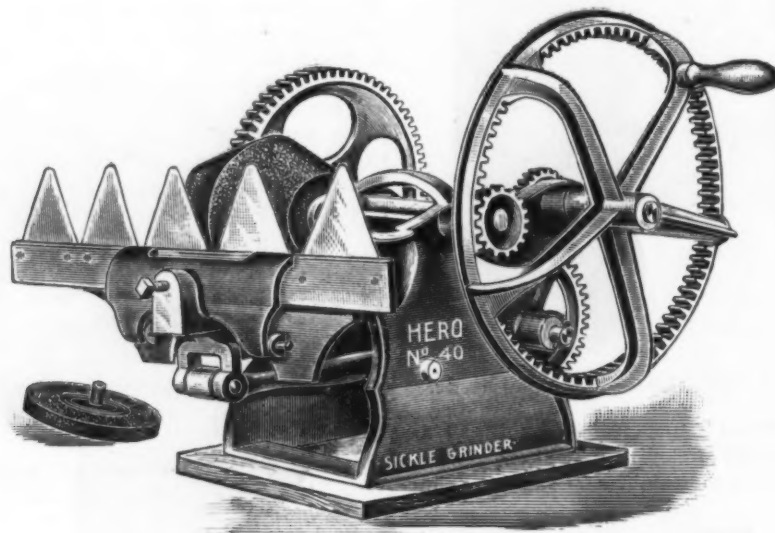
### Hero Section Knife and Tool Grinder No. 40.

The Robertson Mfg. Company, Buffalo, N. Y., are offering the section knife and tool grinder shown herewith. The knife holder is mounted on an oscillating arm having a reciprocating motion. The holder is hinged on the end of the arm, and has a suitable clamp screw with a handle for controlling the pressure of the knife to the wheel. It is also provided with a stop device at any point of contact, so that in case the knife has been broken at any place it may be ground out, thus avoiding grinding down the entire surface of the edge to sharpen the broken part. The motion of the arm can

miter weighs less than 3 pounds, and can be taken apart by unscrewing the thumb nut and packed away, and when in this form, it is explained, it takes up but a few inches of space. The manufacturers refer to the miter as being strong, durable and accurate in operation.

### The Rapid Ice Breaker.

The ice breaker shown herewith is offered by North Bros. Mfg. Company, Philadelphia, Pa. The cylinder of the machine is composed of sections keyed to the driving shaft, each section having two teeth. The teeth

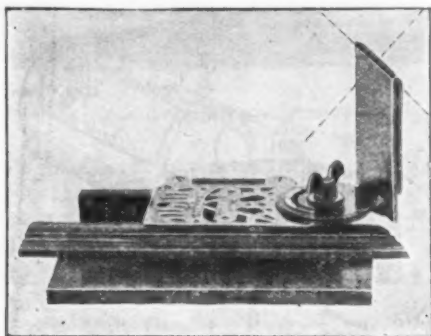


Hero Section Knife and Tool Grinder No. 40.

also be changed instantly from a stationary to a full stroke, or *vice versa*. The machine is provided with a screw adjustment to prevent the points of knives being ground off, allowing only sufficient contact with the abrasive to insure perfect grinding. The emery wheels furnished with machine are referred to as being made of the best Turkish emery of the standard pattern. The machine is supplied with one extra wheel, 6 x  $\frac{3}{4}$  inch, and a special arbor for tool grinding. Saw gumming and sharpening wheels can be mounted on this arbor. The speed of the machine is stated to be 3000 to 5000 revolutions with ease; and the weight complete 21 $\frac{1}{2}$  pounds. All parts, it is explained, are made of the best iron and steel. The point is made that farmers may take the grinder to the field for use in case of accident to section knives.

### The Acme Miter.

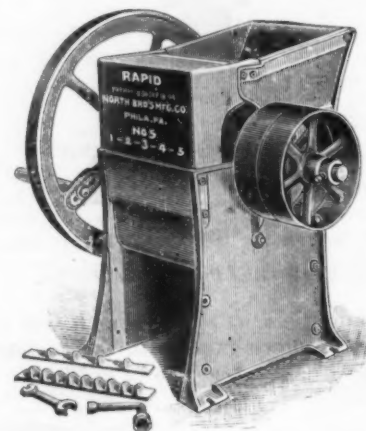
The accompanying cut represents a miter offered by the Parr Tool Company, Buffalo, N. Y. The miter can be set so as to make a perfectly square cut, or by loosening



The Acme Miter.

ing the thumb nut adjusted to any angle desired; 45 degrees either right or left from its center, or square across cut. It is adapted to use, it is explained, wherever a perfect joint either square or angling is required. The

are made of the best cast steel with points forged, tempered and ground. They are attached to the cylinder sections by bronze bolts and malleable iron clamps so that the parts cannot rust together, and to admit of replacing them when desired. Each machine has two



The Rapid Ice Breaker.

combs through which the teeth pass, one for coarse and one for finely broken ice. Besides the variation in size obtained in this manner there is also an adjustment on the machine to use with either comb, so that any desired size of broken ice can be readily obtained. The shaft bearings are bored and the shafts turned to fit. The breaker is arranged for hand and power. The tight and loose pulleys are 14 x 3 $\frac{1}{2}$  inches, and, it is remarked, should run about 80 revolutions per minute. The faster the machine is run the finer the ice will be broken. Two sizes of machines are made, Nos. 5 and 7. They are alike except that the No. 5 has a 14 x 15 inch opening for ice and the No. 7 a 14 x 21 inch opening.

Chas. C. Vick & Co., Hardware dealers, Hoople, N. D., were recently burned out. The loss was fairly covered by insurance.



### Carmical's Improved Combined Seed and Fertilizer Distributer.

The Southern Saw Works, Atlanta, Ga., are offering the seed and fertilizer distributer shown herewith. The wheel is connected with the plow beam by a flexible hinge, upon which the box rests, thus throwing the weight of the box and contents on the wheel, making it turn and continuing the planting of seed and distribution of the fertilizer, independent of the depth or height of the plow points or handles. There is a chain connecting the wheel to a mandrel, which extends through the bottom of the box, with arms attached, which agitate the seed and fertilizer, forcing them to drill regularly in any quantity desired. A partition in the box separates the seed and the fertilizer. Spouts are attached to the box, one on either side of the beam, set reversely, so



Fig. 1.—Carmical's Seed and Fertilizer Distributer.

as to deposit the fertilizer close under the plow and the seed close under the wheel. This arrangement, it is explained, places the fertilizer about 2 inches deeper than the seed, as the dirt falling around the plow covers the fertilizer before the seed falls. The wheel has a flat surface which rolls over the seed to press them all the same depth in the furrow, which is referred to as causing them to germinate quickly and come up evenly, making it especially valuable when planting in dry weather. The covering plows work just behind the wheel and covers the seed with loose dirt. The right side of the machine, which is used for the fertilizer, has a force feed to cut up the lumps, and a gauge which

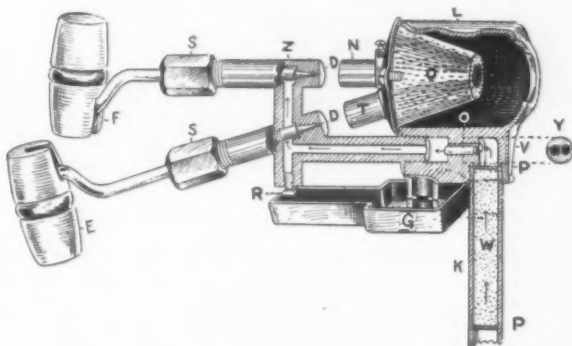


Fig. 2.—Back View of Seed and Fertilizer Distributer.

works with a lever and can be set to distribute any amount desired. By a stroke of the hand the gauge can be closed or opened. The left hand of the machine, used for the seed, has a force feed to drill the seed perfectly regular in any quantity desired. The machine does the work of a distributer and planter at the same time and, it is remarked, not only plants cotton, but drills wheat, oats and sorghum seed.

### The Turner Double Jet Gasoline Burner.

The Turner Brass Works, 44 Franklin street, Chicago, Ill., manufacturers of gasoline double jet burners,



The Turner Double Jet Gasoline Burner.

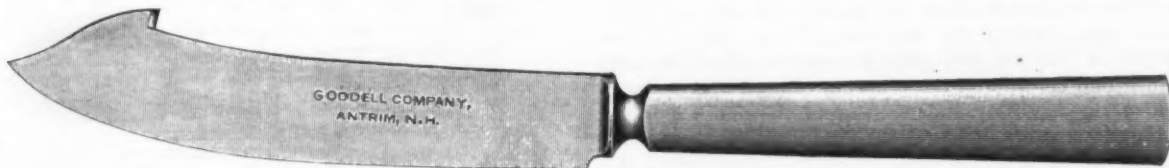
torches, blow pipes, band saw brazing outfits, brazing forges, &c., explain that the double jet gasoline burner herewith illustrated introduces an important improvement in gasoline blow torches. In this torch the gas

and air are controlled independently, instead of by a single jet, the gas being controlled by one valve and the air blast by another. This two-valve control enables the operator, it is explained, to produce a flame of any desired size, from a small concentrated pointed flame to a large powerful one, and at the same time a most in-

tense heat is maintained through all adjustments. In the cut the lower burner valve E is the gas valve and the upper burner F controls the air blast, thus combining the air and gas in a novel way, which principle is claimed to be an advance in high heat production. The double jet burner is referred to as giving perfect combustion and as not only generating the most heat, but as being the most economical of fuel.

### The Goodell Orange Knife.

The illustration herewith given represents an orange knife manufactured by the Goodell Company, Antrim, N. H., New York office, 10 Warren street. The knife, in



*The Goodell Orange Knife.*

appearance, resembles the ordinary fruit knife, with the exception of the deep curve at the back and the hook near the point. The combination of the curve and hook permits the cutting of the peel of an orange or lemon from stem to blossom at a quick stroke, it is explained, without cutting into the pulp, whether the peel is thick or thin. The knife is referred to as being forged from solid bar steel, accurately ground and tempered, with the best quadruple silver plate, finely hand burnished and fully warranted. It is stated that the special feature of this knife is fully protected by patent now pending.

### The Pelouze Coffee Percolator.

The Pelouze Scale & Mfg. Company, 118-132 West Jackson Boulevard, Chicago, Ill., are bringing out the coffee percolator shown herewith. It is designed for use in any coffee pot, and is referred to by the manufac-



*Fig. 1.—The Pelouze Coffee Percolator.*

*Fig. 2.—Pelouze Percolator in Coffee Pot.*

turers as making coffee richer, stronger, purer, more healthful and delicious in flavor than other coffee making devices. As results from its use it is stated that there is no discoloration of coffee, no bitter taste, no grounds and no sediment.

### Accordion or Folding Door Hangers.

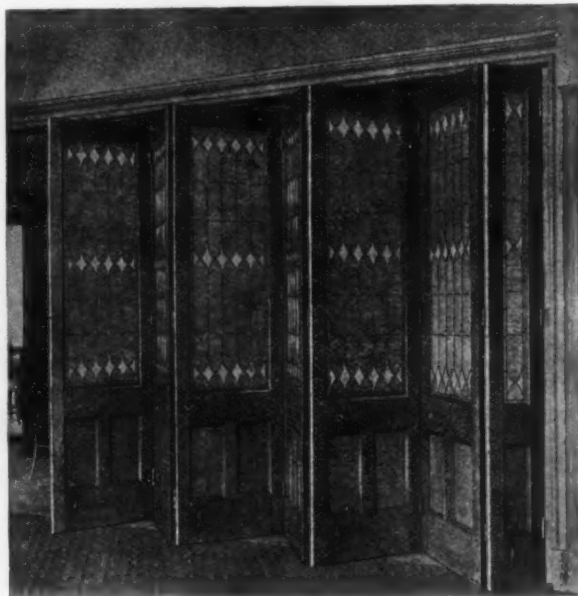
The McCabe Hanger Mfg. Company, 532-542 West Twenty-second street, New York, are putting on the



*Fig. 1.—The McCabe Accordion Hanger.*

market hangers for accordion or folding doors, as shown in the accompanying cuts. The swivel is on the top

of the door instead of on the top of the carriage, a feature to which the manufacturers call particular attention. They state that after considerable experimenting they have succeeded in getting a carriage with double track, and yet sufficiently narrow across the top for



*Fig. 2.—Folding Doors Partially Opened.*

order to have the doors fold flat it is necessary that the carriage should not be wider across the top than



*Fig. 3.—Folding Doors Opened and Closed.*

twice the thickness of the door. By this method of hanging doors large rooms, auditoriums, class rooms, &c., may be divided off and made into smaller rooms.



# Current Hardware Prices.

REVISED MAY 27, 1902.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33½@33¼@10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33¼ and 10 per cent. discount.

**Cut Prices.**—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4, 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic, ½ doz. \$3.00...33½@33¼@10%  
North's...10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent...25¢  
Taplin's Perfection...25¢

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Armad Hammer, Wrought...\$8½@8¼  
Steel Patent Trenton...\$10½@10¼  
Eagle Anvils...\$7½@7¼  
Hay-Budden, Wrought...\$6½@6¼  
Horseshoe brand, Wrought...\$6½@6¼

**Anvil, Vise and Drill—**  
Millers Falls Co., \$18.00...50¢10%

**Apple Parers**—See Parers, Apple, &c.

**Aprons, Blacksmiths'—**  
Hull Bros. Co.:  
Lots of 1 doz...25¢  
Smaller Lots...30¢  
Lots of 3 doz...30¢

**Augers and Bits—**  
Com. Double Spur...70¢70¢10%  
Boring Machine Augers...70¢70¢10%  
Car Bits, 12-in. twist...60¢60¢10%  
Jennings' Pattern

Auger Bits...50¢10¢5@90%  
Ford's Auger and Car Bits...40¢10%  
Foster's Pat. Auger Bits...25¢  
C. E. Jennings & Co.:  
No. 10 ext. Lip, R. Jennings' list 25¢10%  
No. 30, R. Jennings' list 40¢7½10%  
Russell Jennings...25¢10¢10%  
L'Hommedieu Car Bits...15¢10%  
Mayhew's Counterbalance Bits...45¢  
Millers' Falls...50¢10¢10%  
Pugh's Black...20¢  
Pugh's enalings' Pattern...35¢  
Snell's Auger Bits...60¢  
Snell's Bell Hangers' Bits...60¢10%  
Snell's Car Bits, 12-in. twist...60¢  
Wright's Jennings Bits (R. Jennings' list)...50¢

**Bit Stock Drills—**  
Standard List...65¢65¢5%

**Expansive Bits—**  
Clark's small, ½ in. large, ¾ in...50¢10%  
Lavigne's Clark's Pattern, No. 1, ½ doz., \$20; No. 2, \$18...50¢10%  
C. E. Jennings & Co., Steer's Pat...25¢10%  
Swan's...60%

**Gimlet Bits—**  
Common Double Cut, gro. \$2.35@2.75  
German Pattern...\$4.00@4.75

**Hollow Augers—**  
Bonney Pattern, per doz. \$11.00@11.50  
Ames...25¢10%  
New Patent...25¢10%  
Universal...20%  
Wood's Universal...25%

**Ship Augers and Bits—**  
Ford's...40%  
Snell's...40%  
C. E. Jennings & Co.:  
L'Hommedieu's...15¢10%  
Watrous...33½@10%

**Awl Hafts, See Hafts, Awl.**

**Awls—**  
Brad Awls:  
Handled...gro. \$2.75@3.10  
Unhandled, Shouldered, gro. 65¢65¢  
Unhandled, Patent...gro. 65¢70¢  
Peg Awls:  
Unhandled, Patent...gro. 31¢31¢  
Unhandled, Shouldered, gro. 55¢70¢  
Scratch Awls:  
Handled, Common, gro. \$3.50@4.00  
Handled, Socket, gro. \$11.50@12.00

**Awl and Tool Sets—See**  
Sets, Awl and Tool.

**Axes—**  
First Quality, factory brands...\$6.00  
First Quality, jobbers' brands...\$5.75  
Second Quality...\$5.00@5.25

**Axle Grease—See Grease, Axle.**

## Axles—Iron or Steel.

Concord, Loose Collar...4½@5¢  
Concord, Solid Collar...4½@5¢  
No. 1 Common...3½@4¢  
No. 2 Solid Collar...4½@5¢  
Nos. 11 to 18...70¢70¢10%  
Nos. 15 to 18...75¢75¢10%  
Nos. 19 to 22...75¢75¢10%  
2¢ cash 10 days.

**Boxes, Axle—**  
Common and Concord, not turned...15¢4½@4½¢  
Common and Concord, turned...15¢4½@5¢  
Half Patent...15¢4½@5¢  
Fullman's...15¢4½@5¢

**Balances—Sash—**  
Caldwell new list...50¢  
Fullman's...60%

**Spring—**  
Spring Balances...50¢10¢60%  
Chatillon's:  
Light Spg. Balances...40¢10%  
Straight Balances...40%  
Circular Balances...50%  
Large Dial...30%  
Petouze...50%

**Barb Wire—See Wire, Barb.**

**Bars—Crow—**  
Steel Crowbars, 10 to 40 lb., per lb...2½¢5¢

**Beams, Scale—**  
Scale Beams, List Jan. 12, '95, 40¢10%  
Chatillon's No. 1...40%  
Chatillon's No. 2...40%

**Beaters—Egg—**  
Standard Co.:  
No. 0 Rap d...\$4.50  
No. 10 Dover Family Size...\$5.00  
No. 15 Dover Hotel Size...\$15.00  
Rival...\$9.00

Taplin Mfg. Co.:  
No. 69 Improved Dover...\$6.50  
No. 75 Improved Dover...\$7.50  
No. 75-2 Imp'd Dover, Tin'd...\$8.00  
No. 100 Improved Dover...\$8.00  
No. 102 Improved Dover, Tin'd...\$8.50  
No. 150 Improved Dover, Hotel...\$15.00  
No. 152 Imp'd Dover, Hotel, T'd...\$17.00  
Lyon's, Standard size...\$17.50  
Wonder (S. S. & Co.)...\$7.50

**Bellows—**  
Blacksmith, Standard List, 70¢70¢10%

**Blacksmiths—**  
Inch...30 32 34 36 38 40  
Each...\$3.50 3.75 4.25 4.80 5.35 6.15  
Extra Length:  
Each...\$4.00 4.55 5.10 5.60 6.10 7.50

**Molders—**  
Inch...9 10 11 12 13 14 16  
Doz...\$5.75 7.25 8.50 9.50 12.00 14.50

**Hand—**  
Inch...6 7 8 9 10 12  
Doz...\$3.75 4.25 4.50 5.00 5.7 6.75

**Bells—Cow—**  
Ordinary goods...75¢5¢75¢10%  
High grade...75¢70¢10%  
Jersey...75¢10%  
Texas Star...50%

**Door—**  
Abbe's Gong...45%  
Barton Gong...55%  
Home, R. & E. Mfg. Co.'s...55¢10%  
Lever and Pull, Sargent's...60¢10¢10%  
Yankee Gong...35%

**Hand—**  
Hand Bells, Polished...60¢5¢60¢10%  
White Metal...55¢5¢10%  
Nickel Plated...50¢5¢10%  
Swiss...60¢60¢10%  
Silver Chime...33½@30¢10%

**Miscellaneous—**  
Farm Bells...15¢5¢4¢  
Steel Alloy Church and School...60%  
National Bell Foundry Co.:  
Superior Cast Steel Church and School Bells...50¢10¢5¢60%  
Wilmet & Hobbs Mfg. Co., Gongs...70%  
Trip Gong Bells...55¢10¢80%

**Belting—Rubber—**  
Agricultural (Low Grade)...75¢10¢80%  
Common Standard...75¢75¢10%  
Standard...70¢70¢10%  
Extra...60¢10¢5%  
High Grade...50¢10¢50¢10¢5%  
Boston Belting Co.:  
Seamless Stitched, 1" imperial...45¢5¢  
Boston...50¢5¢  
Nagara...60¢5¢

**Leather—**  
Extra Heavy, Short Lap...50¢10¢60%

## Regular Short Lap...60¢60¢5%

Standard...60¢10¢65¢10%  
Light Standard...65¢70%  
Leather Lacing...60¢10%

**Cotton—**  
Rossendale-Reddaway B. & H. Co.:  
Sphinx Brand...60¢10%  
Durable Brand...70%

**Bench Stops—See Stops, Bench**

**Benders and Upsetters, Tire—**  
Green River Tire Benders and Upsetters...20%  
Stoddard's Lightning Tire Upsetters, No. 1, \$3.75; No. 2, \$6.50; No. 3, \$9.50; No. 4, \$14.75.

**Bicycle Goods—**  
John S. Long's Son's 1902 list:  
Chain...50%  
Parks...50%  
Spokes...50%  
Tubes...60%

**Bits—**  
Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

**Bit Holders—See Holders.**

**Blind Adjusters—See Ad-**

**justers, Blind.**

**Blind Fasteners—See Fast-**

**eners, Blind.**

**Blind Staples—See Staples,**

**Blind.**

**Blocks—Tackle—**  
Common Wooden...70¢10¢75%  
Claydon's teel...60¢10¢70%  
Ford's Star Brand Self Lubricating...60¢10%  
Hollow Steel, Ford's Pat. Star Brand...50¢10%

Lane's Patent Automatic Lock and Junior...30%  
Stowell's Novelty, Mail Iron...50¢10%  
See also Machines, Hoisting.

**Beards Stove—**  
Zinc, Crystal, &c...40¢40¢10%

**Bolts—**  
Carriage, Machine &c.—  
Common, list Feb. 1, '92...60¢5¢  
Norway Iron, \$3.00, list Jan. 1, '98...80¢80¢5%  
Phila. Eagle, \$3.00 list May 21, '99...80¢80¢5%

Bolt Ends, list Feb. 14, '95...70¢10%  
Machine, list Oct. 1, '99...65¢5¢  
Machine with C & T. Nuts...65¢7½¢  
NOTE.—Jobbers are in many cases underselling the manufacturers.

**Door and Shutter—**  
Cast Iron Barrel, Round Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.25 30 30 37 65  
Cast Iron Spring Foot:  
Inch...6 8 10  
Per doz...\$1.00 1.25 1.75  
Cast Iron Chain, Flat, Japaned:  
Inch...6 7 8 10  
Per doz...\$0.75 1.05 1.30  
Cast Iron Shutter, Brass Knobs:  
Inch...6 8 10  
Per doz...\$0.57 80 1.00  
Wrought Barrel Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.44 50 61 70 1.23  
Wrought Barrel...75¢5¢75¢10¢5%  
Wrought...Bronzed, 40¢5¢50¢10%  
Wrought Flush, E. K., 50¢10¢50¢10%  
Wrought Shutter...40¢10¢10¢50¢5%  
Wrought Square Neck...50¢50¢10%  
Wrought Sunk...60¢50¢10%  
Ives' Patent Door...60%

**Stove and Plow—**  
Plow...60¢5¢10%  
Stove...77½%

**Tire—**  
Common...77½%  
Norway Iron...80¢80¢5%  
American Screw Company:  
Norway Phila., list Oct. 16, '94...82½%  
Eagle Phila., list Oct. 16, '94...85%  
Bay State, list Dec. 28, '99...77½%  
Franklin Moore Co.:  
Eagle Phila., list Oct. 16, '94...82½%  
Norway Phila., list Oct. 16, '94...85%  
Eclipse, list Dec. 28, '99...77½%  
Port Chester Bolt & Nut Company:  
Empire, list Dec. 28, '99...77½%  
Keystone Phila., list Oct. '94...85%  
Norway Phila., list Oct. '94...82½%  
Union Wire Co.:  
Tire Bolts...77½%

## Borers, Tap—

Borers Tap, Ring, with Handle:  
Inch...1 1½ 1¾ 2 2½ 3 3½ 4 4½ 5 5½ 6 6½ 7 7½ 8 8½ 9 9½ 10 11 12 13 14 15 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100  
Per doz...\$1.30 5.00 5.75 7.25 8.50 9.75 11.00 12.25 13.50 14.75 16.00 17.25 18.50 19.75 21.00 22.25 23.50 24.75 26.00 27.25 28.50 29.75 31.00 32.25 33.50 34.75 36.00 37.25 38.50 39.75 41.00 42.25 43.50 44.75 46.00 47.25 48.50 49.75 51.00 52.25 53.50 54.75 56.00 57.25 58.50 59.75 61.00 62.25 63.50 64.75 66.00 67.25 68.50 69.75 71.00 72.25 73.50 74.75 76.00 77.25 78.50 79.75 81.00 82.25 83.50 84.75 86.00 87.25 88.50 89.75 91.00 92.25 93.50 94.75 96.00 97.25 98.50 99.75 101.00 102.25 103.50 104.75 106.00 107.25 108.50 109.75 111.00 112.25 113.50 114.75 116.00 117.25 118.50 119.75 121.00 122.25 123.50 124.75 126.00 127.25 128.50 129.75 131.00 132.25 133.50 134.75 136.00 137.25 138.50 139.75 141.00 142.25 143.50 144.75 146.00 147.25 148.50 149.75 151.00 152.25 153.50 154.75 156.00 157.25 158.50 159.75 161.00 162.25 163.50 164.75 166.00 167.25 168.50 169.75 171.00 172.25 173.50 174.75 176.00 177.25 178.50 179.75 181.00 182.25 183.50 184.75 186.00 187.25 188.50 189.75 191.00 192.25 193.50 194.75 196.00 197.25 198.50 199.75 201.00 202.25 203.50 204.75 206.00 207.25 208.50 209.75 211.00 212.25 213.50 214.75 216.00 217.25 218.50 219.75 221.00 222.25 223.50 224.75 226.00 227.25 228.50 229.75 231.00 232.25 233.50 234.75 236.00 237.25 238.50 239.75 241.00 242.25 243.50 244.75 246.00 247.25 248.50 249.75 251.00 252.25 253.50 254.75 256.00 257.25 258.50 259.75 261.00 262.25 263.50 264.75 266.00 267.25 268.50 269.75 271.00 272.25 273.50 274.75 276.00 277.25 278.50 279.75 281.00 282.25 283.50 284.75 286.00 287.25 288.50 289.75 291.00 292.25 293.50 294.75 296.00 297.25 298.50 299.75 301.00 302.25 303.50 304.75 306.00 307.25 308.50 309.75 311.00 312.25 313.50 314.75 316.00 317.25 318.50 319.75 321.00 322.25 323.50 324.75 326.00 327.25 328.50 329.75 331.00 332.25 333.50 334.75 336.00 337.25 338.50 339.75 341.00 342.25 343.50 344.75 346.00 347.25 348.50 349.75 351.00 352.25 353.50 354.75 356.00 357.25 358.50 359.75 361.00 362.25 363.50 364.75 366.00 367.25 368.50 369.75 371.00 372.25 373.50 374.75 376.00 377.25 378.50 379.75 381.00 382.25 383.50 384.75 386.00 387.25 388.50 389.75 391.00 392.25 393.50 394.75 396.00 397.25 398.50 399.75 401.00 402.25 403.50 404.75 406.00 407.25 408.50 409.75 411.00 412.25 413.50 414.75 416.00 417.25 418.50 419.75 421.00 422.25 423.50 424.75 426.00 427.25 428.50 429.75 431.00 432.25 433.50 434.75 436.00 437.25 438.50 439.75 441.00 442.25 443.50 444.75 446.00 447.25 448.50 449.75 451.00 452.25 453.50 454.75 456.00 457.25 458.50 459.75 461.00 462.25 463.50 464.75 466.00 467.25 468.50 469.75 471.00 472.25 473.50 474.75 476.00 477.25 478.50 479.75 481.00 482.25 483.50 484.75 486.00 487.25 488.50 489.75 491.00 492.25 493.50 494.75 496.00 497.25 498.50 499.75 501.00 502.25 503.50 504.75 506.00 507.25 508.50 509.75 511.00 512.25 513.50 514.75 516.00 517.25 518.50 519.75 521.00 522.25 523.50 524.75 526.00 527.25 528.50 529.75 531.00 532.25 533.50 534.75 536.00 537.25 538.50 539.75 541.00 542.25 543.50 544.75 546.00 547.25 548.50 549.75 551.00 552.25 553.50 554.75 556.00 557.25 558.50 559.75 561.00 562.25 563.50 564.75 566.00 567.25 568.50 569.75 571.00 572.25 573.50 574.75 576.00 577.25 578.50 579.75 581.00 582.25 583.50 584.75 586.00 587.25 588.50 589.75 591.00 592.25 593.50 594.75 596.00 597.25 598.50 599.75 601.00 602.25 603.50 604.75 606.00 607.25 608.50 609.75 611.00 612.25 613.50 614.75 616.00 617.25 618.50 619.75 621.00 622.25 623.50 624.75 626.00 627.25 628.50 629.75 631.00 632.25 633.50 634.75 636.00 637.25 638.50 639.75 641.00 642.25 643.50 644.75 646.00 647.25 648.50 649.75 651.00 652.25 653.50 654.75 656.00 657.25 658.50 659.75 661.00 662.25 663.50 664.75 666.00 667.25 668.50 669.75 671.00 672.25 673.50 674.75 676.00 677.25 678.50 679.75 681.00 682.25 683.50 684.75 686.00 687.25 688.50 689.75 691.00 692.25 693.50 694.75 696.00 697.25 698.50 699.75 701.00 702.25 703.50 704.75 706.00 707.25 708.50 709.75 711.00 712.25 713.50 714.75 716.00 717.25 718.50 719.75 721.00 722.25 723.50 724.75 726.00 727.25 728.50 729.75 731.00 732.25 733.50 734.75 736.00 737.25 738.50 739.75 741.00 742.25 743.50 744.75 746.00 747.25 748.50 749.75 751.00 752.25 753.50 754.75 756.00 757.25 758.50 759.75 761.00 762.25 763.50 764.75 766.00 767.25 768.50 769.75 771.00 772.25 773.50 774.75 776.00 777.25 778.50 779.75 781.00 782.25 783.50 784.75 786.00 787.25 788.50 789.75 791.00 792.25 793.50 794.75 796.00 797.25 798.50 799.75 801.00 802.25 803.50 804.75 806.00 807.25 808.50 809.75 811.00 812.25 813.50 814.75 816.00 817.25 818.50 819.75 821.00 822.25 823.50 824.75 826.00 827.25 828.50 829.75 831.00 832.25 833.50 834.75 836.00 837.25 838.50 839.75 841.00 842.25 843.50 844.75 846.00 847.25 848.50 849.75 851.00 852.25 853.50 854.75 856.00 857.25 858.50 859.75 861.00 862.25 863.50 864.75 866.00 867.25 868.50 869.75 871.00 872.25 873.50 874.75 876.00 877.25 878.50 879.75 881.00 882.25 883.50 884.75 886.00 887.25 888.50 889.75 891.00 892.25 893.50 894.75 896.00 897.25 898.50 899.75 901.00 902.25 903.50 904.75 906.00

**Cartridges—**

Blank Cartridges—  
 32 C. F., \$5.50.....10c5%  
 32 C. F., \$7.00.....10c5%  
 32 cal. Rim., \$1.50.....10c5%  
 32 cal. Rim., \$2.75.....10c5%  
 B. B. Caps, Com., Ball Sngl.....\$1.90  
 B. B. Caps, Round Ball.....\$1.40  
 Central Fire.....25%  
 Target and Sporting Rifle.....15c5%  
 Primed Shells and Bullets.....15c10%  
 Rim Fire Sporting.....50%  
 Rim Fire, Military.....15c5%

**Castors—**

Bed.....70c10% to 70c10%5%  
 Flat.....70c10% to 70c10%5%  
 Philadelphia.....75c10% to 75c10%5%  
 Boss.....70c10%  
 Boss Anti-Friction.....70c10%  
 Martin's Patent (Phoenix).....45%  
 Payson's Anti-Friction.....70c10% to 10%  
 Standard Ball Bearing.....45%  
 Tucker's Patent low lat.....30%

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coil—**

American Coil, Jobbers' Shipments:  
 5-16 1/4 6-16 3/4 7-16 1/2 8-16 1/2  
 8-70 6-36 5-30 4-50 4-30 4-20 4-25  
 4 1/2 4-15 4-15 4-15 per 100 lb.  
 Less than Cash lots add 25c.

**German Coil.....60c10% to 10%5%****Halters and Ties—**

Halter Chains.....60c10% to 60c10%5%  
 German Halter Chain, list July 24.....70%  
 Cow Ties.....10c to 60c5%

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pair  
 6 1/2-6 1/2, Straight, with ring.....\$30.00  
 6 1/2-6 1/2, Straight, with ring.....\$31.00  
 6 1/2-6 1/2, Straight, with ring.....\$36.00  
 6 1/2-10 1/2, Straight, with ring.....\$38.00  
 Add 2c per pair for Hooks  
 Trunk Traces 5c per pair higher than  
 Straight Link.

**Trace, Wagon and Fency Chains.....50c10% to 50c10%5%****Miscellaneous—**

Jack Chain, list July 10, '99.....60c10% to 60c10%5%  
 Iron.....60c10% to 60c10%5%  
 Safety Chain.....70c5% to 70c10%5%  
 Gal. Pump Chain.....lb. 4 3/4 1/2 c  
 Covert Mfg. Co.:  
 Breast.....35c2%  
 Halter.....35c2%  
 Heel.....35c2%  
 Reel.....35c2%  
 Stallion.....35c2%  
 Covert Sad. Works:  
 Breast.....70%  
 Halter.....70%  
 Fold Back.....70%  
 Reel.....70%  
 Oneida Community:  
 Am. C. H. and Halters.....40c15c5%  
 Am. Cow Pies.....45c50%  
 Eureka Coil and Halters.....45c50%  
 Niagara Coil and Halters.....45c50%  
 Niagara Cow Pies.....45c50%  
 Wire Dog Chains.....35c50%  
 Wire Goods Co.:  
 Dog Chain.....60c10%  
 Universal Painted Chain.....50%

**Chalk—(From Jobbers.)**

Carpenters' Blue.....gro. 42c15c  
 Carpenters' Red.....gro. 37c40%  
 Carpenters' White.....gro. 33c35c  
 See also Crayons.

**Chalk Lines—See Lines.****Checks, Door—**

Bardsley's.....40c10%  
 Columbia.....50c10%  
 Eclipse.....90%

**Chests, Tool—**

American Tool Chest Co.:  
 Boys' Chests, with Tools.....55%  
 Youths' Chests, with Tools.....40%  
 Gentlemen's Chests, with Tools.....30%  
 Farmers', Carpenters', etc., Chests,  
 with Tools.....20%  
 Machinists' and Pipe Fitters' Chests,  
 Empty.....50%  
 C. E. Jennings & Co.'s Machinists' Tool  
 Chests.....33c45c10%  
**Chisels—**  
 Socket Framing and Firmer  
 Standard List.....70c70c10%  
 Buck Bros.....30%  
 Charles Buck.....30%  
 C. E. Jennings & Co. Socket Firmer  
 No. 10.....60c10%  
 C. E. Jennings & Co. Socket Framing  
 No. 15.....60c10%  
 Swan's.....70%  
 L. & J. White.....30c90c5%

**Tanged—**

Tanged Firmers.....50c50c10%  
 Buck Bros.....30%  
 Charles Buck.....30%  
 C. E. Jennings & Co. No. 10, 181.....16c10%  
 L. & J. White, Tanged.....35c5%

**Cold—**

Cold Chisels, good quality, lb. 13c15c  
 Cold Chisels, fair quality, lb. 11c12c  
 Cold Chisels, ordinary, lb. 8c9c

**Chucks—**

Beach Pat., each \$8.00.....30%  
 Mansey's Planer and Milling.....15c20%  
 Pratt's Positive Drive.....20%  
 Empire.....25%  
 Blacksmiths.....25%  
 Skinner Patent Chucks.....25%  
 Combination Lathe Chucks.....40%  
 Drill Chucks, Patent and Standard.....30%  
 Drill Chucks, New Model.....2 1/2%  
 Independent Lathe Chucks.....40%  
 Improved Planer Chucks.....25%  
 Universal Lathe Chucks.....40%  
 Face Plate Jaws.....40%  
 Standard Tool Co.:  
 Improved Drill Chuck.....45%  
 Union Mfg. Co.:  
 Combination.....40%  
 C. H. Drill.....30%  
 Geared Scroll.....30%  
 Independent.....30%  
 Union Drill.....30%  
 Universal.....40%  
 Face Plate Jaws.....35%

**Clamps—**

Adjustable, Hammer's.....20c90c5%  
 Cabinet Sargent's.....50c10%  
 Carriage Makers' P. S. & W. Co.....50%  
 Carriage Makers' Sargent's.....60%  
 Best, Parallel.....30c10%  
 Lineman's, Ulica Drop Forge & Tool  
 Co.....40%  
 Saw Clamps, see Vices, Saw Filers.

**Cleaners, Sidewalk—**

Star Socket, All Steel.....\$4.00 net  
 Star Shank, All Steel.....\$3.75 net  
 W. & C. Shank, All steel, 7 1/2 in. x 1/2 in.,  
 \$3.00; 8 in., \$3.10; 8 1/2 in., \$3.25.

**Cleavers, Butchers—**

Poster Bros.....30%  
 New Haven Edge Tool Co.'s.....45%  
 Fayette R. Plumb.....30c30c10%  
 P. S. & W.....50c50c5%  
 L. & J. White.....35%

**Clippers—**

Chicago Flexible Shaft Company:  
 Handy Toilet.....\$7.90  
 Mascotte Toilet.....\$3.40  
 Monitor Toilet.....\$9.00  
 Stewart's Patent.....\$10.00

**Clips, Axle—**

Eagle and Superior 1/4 and 5-16  
 inch.....70c10%  
 Norway, 1/2 and 5-16 inch.....70c10%

**Cloth and Netting, Wire—**

See Wire, &c.

**Cocks, Brass—**

Hardware list:  
 Compression and Plain Bibbs.....65c50c10%  
 Globe, Kerosene, Racking, &c.....65c10% to 70%

**Coffee Mills—See Mills, Coffee.****Collars, Dog—**

Brass, Pope & Stevens' list.....40%  
 Embossed, Gilt, Pope & Stevens' list.....30c10%  
 Leather Pope & Stevens' list.....40%

**Compasses Dividers, &c.—**

Ordinary Goods.....75c75c5%  
 Bemis & Call Hdw. & Tool Co.:  
 Dividers.....65%  
 Callipers, Call's Patent Inside.....55%  
 Callipers, Double.....65%  
 Callipers, Inside or Outside.....65%  
 Callipers, Wing.....60%  
 Compasses.....50%  
 J. Stevens A. & T. Co.....35c10%  
 J. R. Hughes & Co.....\$2.50

**Compressors, Corn Shock—**

Conductor Pipe, Galva.—  
 L. C. L. to Dealers:  
 Territory.....Not needed. Needed.  
 Eastern.....70c2 1/2% to 10% 70c5% to 10%  
 Central.....55c10% to 10% 70c10%  
 Southern.....65c10% 65c2 1/2% to 10%  
 S. Western.....30c12 1/2% to 10% 60c15% to 10%  
 Terms 2% for cash.  
 Jobbers receive extra 12 1/2% on car-  
 loads loose, and extra 12 1/2% on car-  
 loads crated.

**Coolers, Water—**

See also Eave Troughs.  
 Gal. each.....\$1.50 \$1.80 \$2.10 \$2.40  
 Laborator \$1.20 \$1.50 \$1.80 \$2.10 \$2.40  
 Gal. 3 4 5 6 8  
 Iceland, ea. \$1.80 \$2.10 \$2.40 \$3.00  
 Gal. 3 4 5 6 8  
 Galv. Lined Ea. \$1.35 \$2.00 \$2.25 \$2.50 \$3.00  
 25%  
 Galv. Lined side handles  
 Gal. 3 4 5 6 8  
 Each \$1.35 \$2.15 \$2.40 \$3.30 \$4.15, 25%

**Coopers' Tools—**

See Tools, Coopers.

**Cord—**

Braided, Drab.....lb. 25c  
 Braided, White, Com.....lb. 17 1/2% to 18c  
 Cable Laid Italian.....lb. A, 18c; B, 16c  
 Common India.....lb. 9 1/2% to 10%  
 Cotton sash Cord, Twisted.....12c to 16c  
 Patent Russia.....lb. 12 1/2% to 13c  
 Cable Laid Russia.....lb. 13 1/2% to 14c  
 India Hemp, Braided.....lb. 14c to 15c  
 India Hemp, Twisted.....lb. 10c to 12c  
 Pearl Braided, cotton.....lb. 10c to 12c  
 Massachusetts, White.....\$ 18c  
 Massachusetts, Drab.....\$ 22c  
 Eddystone Braided Cotton.....\$ 18c  
 Harmony Cable Laid Italian.....\$ 18c  
 Ossawa Mills:  
 Brown, Solid Braided White.....\$ 22c  
 Braided, Giant, White.....\$ 20c  
 Peerless:  
 Cable Laid Italian.....16c  
 Cable Laid Russian.....14c  
 Cable Laid India.....12c  
 Braided India.....18c  
 Phoenix, White.....19c  
 Samson, Nos. 7 to 10.....\$ 29c  
 Braided, Drab Cotton.....\$ 29c  
 Braided, Italian Hemp.....\$ 39c  
 Braided, Linen.....\$ 49c  
 Braided, White Cotton, Spot.....\$ 28c  
 No. 6 cords, 1 1/2 extra.

**Silver Lake—**

A quality, Drab, 40c.....15%  
 B quality, White, 35c.....15%  
 B quality, Drab, 35c.....15%  
 B quality, White, 30c.....15%  
 Italian Hemp, 40c.....15%  
 Linen, 67c.....15%

**Wire, Picture—**

List Oct. 1, 1901.....10c10% to 10c10%5%  
 Note.—There is a good deal of confusion  
 in lists, some using old list and others the  
 above list.

**Corn Knives and Cutters—**

See Knives, Corn.

**Corn Planters—**

See Planters, Corn.

**Crackers, Nut—**

Little Giant.....\$ 24.00

**Cradles—**

Grain.....50%

**Crayons—**

White Round Crayons, gross, 5 1/2% to 6c  
 Cases, 100 gro., \$4.50, at factory.  
 D. M. Steward Mfg. Co.:  
 Metal Workers' Crayons, gr. \$3.50  
 Soapstone Pencils, round, flat  
 or square.....gr. \$1.50  
 Rolling Mill Crayons.....gr. \$2.50  
 Railroad Crayons (comp.)  
 station gr. \$2.00

**See also Chalk.****Creamery Pails—See Pails.****Creamery.****Crooks, Shepherds—**

Fort Madison, Heavy.....\$ doz. \$7.00  
 Fort Madison, Light.....\$ doz. \$6.50

**Crow Bars—See Bars, Crow.****Cultivators—**

Victor Garden.....\$ doz. \$10.00

**Cutlery Table—**

International Silver Company:  
 No. 12 Medium Knives, 1817.....\$ doz. \$3.50  
 Star, Eagle, Rogers & Hamilton and  
 Anchor.....\$ doz. \$3.00  
 Wm. Rogers & Son.....\$ doz. \$2.50  
 Simeon L. & Geo. H. Rogers Company:  
 12 div. Medium Knives.....\$ doz. \$3.00  
 No. 77 Medium Knives.....\$ doz. \$2.50

**Cutters—**

H. H. Mayhew Co.....40%  
 Smith & Hemenway Co.....50%

**Glass—**

Meat—  
 Hale's, Nos. 11 & 11 1/2 12 1/2 13 1/2 14 1/2  
 Per doz.....\$9.50 12.50 16.00  
 American.....30%  
 Nos. 1 2 3 4 5 6 7 8 9 10 11 12  
 Each.....\$5 \$7 \$10 \$25 \$50 \$100  
 Connecticut.....30%  
 No. 20 40 60 8 10 12  
 Each.....\$1.75 2.00 2.25 3.00 3.00 4.00  
 Enterprise.....25c to 75c  
 Nos. 5 10 12 22 33  
 Each.....\$2 \$3 \$2.50 \$4 \$6  
 Dixon's.....\$ doz. \$10.00 \$10.00 \$10.00  
 No. 4.....\$14.00 \$17.00 \$19.00 \$30.00  
 Home No. 1, \$ doz. \$22.75.....50c10%  
 Little Giant, \$ doz. \$35.00.....50c10%  
 Nos. 305 310 312 340 322  
 \$35.00 \$45.00 \$44.00 \$71.00 \$68.00  
 Sterling.....\$35.00  
 Each.....\$5.00 \$2.50  
 New Triumph No. 605, \$ doz. \$24.00.....30c10% to 40%  
 Woodruff's, \$ doz. \$10.00 \$10.00 \$10.00  
 No. 100.....100 150  
 Chadborn's Smoked Beef Cutter.....\$18.00  
 Enterprise Beef Shavers.....\$25c to 30%

**Slaw and Kraut—**

Henry Disston & Sons:  
 Slaw, Corn Grater, &c.....40%  
 Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 55%  
 Kraut Cutters 36 x 12, 40 x 12, 40%  
 Tucker & Dorsey Mfg. Co.:  
 Kraut Cutters, 1 Knife, \$ gr. \$19c to \$20c  
 Slaw Cutters, 2 Knife, \$ gr. \$22c to \$36c

**Tobacco—**

All Iron, Cheap.....\$ doz. \$4.25 to \$4.50  
 Enterprise.....25c to 50%  
 National, \$ doz. \$21.00.....40%  
 Sargent's, \$ doz. No. 2.....40%  
 Sargent's No. 12 and 21.....50c10%

**Washer—**

Appleton's, \$ doz. \$16.00.....50c10%  
 Bonney's.....40%

**Diggers, Post Hole, &c.—**

Dalbey Post Hole Auger.....per doz. \$9.00  
 Iwan's Improved Post Hole Auger.....40%  
 Iwan's Perfection Post Hole Digger.....\$ doz. \$9.00  
 Kohler's Universal.....\$ doz. \$14.00  
 Kohler's Little Giant.....\$ doz. \$14.00  
 Kohler's Hercules.....\$ doz. \$12.00  
 Kohler's Irresistible.....\$ doz. \$10.00  
 Kohler's Rival.....\$ doz. \$9.00  
 Kohler's Pioneer.....\$ doz. \$9.00  
 Never-Break Post Hole Diggers, \$ doz.  
 \$24.00.....60%  
 Samson, \$ doz. \$34.00.....25%

**Dividers—See Compasses.****Dog Collars—See Collars, Dog.****Door Checks—**

See Checks, Door.

**Door Springs—**

See Springs, Door.

**Doors, Screen—**

Porter's Plain, No. 6.....\$ doz. \$6.50  
 Porter's Ornamental, No. 70, \$ doz. \$10.00

**Drawers, Money—**

Tucker's Pat. Alarm Tilt No. 1, \$ doz.  
 \$18; No. 2, \$18; No. 3, \$12; No. 4, \$18.

**Drawing Knives—**

See Knives, Drawing.

**Drills and Drill Stocks—**

Common Blacksmiths' Drill.....each  
 \$1.50 to \$1.75  
 Blacksmiths' Self-feeding.....each  
 \$3.75 to \$4.00  
 Breast, Millers Falls.....10c10%  
 Breast, P. S. & W.....40c5%  
 Goodell Automatic Drills.....40c5% to 10%  
 Johnson's Automatic Drills Nos. 2 and  
 3.....10c10%  
 Johnson's Drill Points.....10c10%  
 Millers Falls Automatic Drills.....30c10%  
 Ratchet, Curtis & Curtis.....25%  
 Ratchet, Parker's.....40%  
 Ratchet, Weston's.....30c25%  
 Ratchet, Whitney's P. S. & W.....50%  
 Whitney's Hand Drill, No. 1, \$10.00;  
 Adjustable, No. 10, \$12.00.....33c4%

**Twist Drills—**

Standard List.....60c10% to 60c10%1%  
 Drill Bits or Bit Stock—  
 Drills—See Augers and Bits.  
 Drill Chucks—See Chucks.  
 Dripping Pans—  
 See Pans, Dripping.  
 Drivers, Screw—  
 Screw Driver Bits.....per doz. \$5 to 70c  
 Balsey's Screw Holder and Driver, \$ doz.  
 1/2-inch, \$8; 3/4-inch, \$7.50 6-inch, \$9.40%  
 Buck Bros.....80%  
 Buck Bros' Screw Driver Bits.....30%  
 Champion.....50%  
 Fray's Hol. 'd's Sets, No. 3, \$12.00 50%  
 No. 50 Double Action Ratchet.....35%  
 Goodell's Automatic.....50c10% to 50c10%10c5%  
 Mayhew's Black Handle.....50%  
 Mayhew's Monarch.....40c10%  
 Millers Falls, Nos. 20 and 21.....35c10%  
 Millers Falls, Nos. 11, 12, 41, 42.....15c10%  
 New England Specialty Co.....50c10%  
 Sargent & Co.'s:  
 Nos. 1, 50, 55 and 60.....80%  
 Nos. 20 and 40.....70%  
 Smith & Hemenway Co.....40c5%  
 Stanley's R. & L. Co.'s:  
 No. 64, Varnished Handles 70c to 10c10%  
 No. 86.....70c to 10c10%  
 Swan's:  
 Nos. 65 to 69.....50%

**No. 40.....40c10%****Eave Trough Galvanized**

Territory.....2 C. L.  
 Eastern.....75c10% to 10%  
 Central.....75c10% to 10%  
 Southern.....70c7 1/2% to 10%  
 S. Western.....70c10% to 10%  
 Terms, 2% for cash.  
 See also Conductor Pipe and Elbows.

**Egg Beaters—See Beaters, Egg****Egg Openers—**

See Openers, Egg.

**Elbows and Shoes—**

Factory shipments.....60%  
 Perfect Elbows (S. S. & Co.).....30%

**Emery, Turkish—**

4 to 5 5/8 to 150 Flour  
 Kegs.....lb. 6c 6 1/2c 8 1/2c  
 1/2 Kegs.....lb. 5 1/2c 6 1/2c 8 1/2c  
 10-lb cans, 10 in case 6 1/2c 7c 8c  
 10-lb cans less than 10 lb. 10c 8c  
 Note.—In lots 10 to 1 tons a discount of  
 10% is given.

**Enameled and Tinned Ware—See Ware, Hollow.****Escutcheon Pins—**

See Pins, Escutcheon.

**Extractors, Lemon Juice—**

See Squeezers, Lemon.

**Fasteners, Blind—**

Zimmerman's.....50c10%

**Faucets—**

Cork Lined.....70c5% to 70c10%5%  
 Metallic Key, Leather Lined.....70c10%  
 Red Cedar.....50c50c10%  
 B. & L. B. Co.:  
 Lockport, Metal Plug, reduced list 60c5%  
 Star, Metal Plug new list.....40c40c5%  
 West's Lock, Open and Shut Key 50c10%  
 John Sommer's Peerless Tin Key.....40%  
 John Sommer's Boss Tin Key.....50%  
 John Sommer's Victor Metal Key 50c10%  
 John Sommer's Duplex Metal Key.....60%  
 John Sommer's Diamond Lock.....40%  
 John Sommer's L. X. L. Cork Lined.....50%  
 John Sommer's Reliable Cork Lined.....50c10%  
 John Sommer's Chicago Cork Lined.....60%  
 John Sommer's O. K. Cork Lined.....50%  
 John Sommer's No. 6 Brass, Celar.....50%  
 John Sommer's Perfection Cedar.....40%  
 McKenna, Brass:  
 Burglar Proof, N. F.....35%  
 Improved, 3/4 and 7/8 inch.....35%  
 Self Measuring:  
 Enterprise, \$ doz. \$30.00.....40c10%  
 Lane's, \$ doz. \$36.00.....40c10%  
 National Measuring, \$ doz. \$30.00.....40%

**Felice Plates—**

See Plates, Felice.

**Files—Domestic—**

List revised Nov. 1, 1899.  
 Best Brands.....70c5% to 70c10%  
 Standard Brands.....75c75c10%  
 Second Quality.....75c10% to 80c5%

**Imported—**

Stubs' Tapers, Stubs' list, July 24.....25%  
 '97.....25%

**Fixtures, Grindstone—**

Net Prices:  
 Inch.....15 17 19 21 34  
 Per doz. \$2.60 2.75 3.00 3



**Gates, Molasses and Oil-Stebbles**

**Gauges**  
Marking, Mortise, etc.  
55¢ 10¢ 55¢ 10¢ 10¢  
Fulton's Butt Gauge..... 30¢ 10¢  
Stanley R. & L. Co.'s Butt & Babbet Gauge..... 20¢ 20¢ 10¢ 10¢  
Wire, Brown & Sharpe's..... 25¢  
Wire, Morse's..... 35¢  
Wire F. S. & W. Co..... 30¢ 10¢

**Gimlets—Single Cut**  
Nail, Metal, Assorted, gro. \$1.50 @ 1.60  
Spike, Metal, Assorted, gro. \$2.30 @ 3.25  
Nail, Wood Handled, Assorted, gro. \$1.75 @ 2.00  
Spike, Wood Handled, Assorted, gro. \$3.25 @ 3.50

**Glass, American Window**  
Jobbers' List, Jan. 21, 1901.  
From store..... 90¢ 10¢  
P. O. B. factory, carload lots:  
Single strength..... 50¢ 10¢ 7½¢  
Double strength..... 50¢ 10¢ 1½¢

**Glue—Liquid, Fish**  
List A, Bottles or Cans, with Brush.  
57½¢ 50¢  
List B, Cans (½ pils., pts., qts) 33½¢ 45¢  
List C, Cans (½ gal., gal.)..... 25¢ 45¢  
International Glue Co. (Martin's)..... 4¢ 10¢ 50¢

**Glue Pots—See Pots, Glue**  
**Grease, Axle**  
Common Grade..... gro. \$5.00 @ 5.00  
Dixon's Everlasting..... 10¢ 2 pails, ea. 50¢  
Dixon's Everlasting, in bxs. 3 doz. 1 lb. \$1.20; 2 doz. 2 lb. \$2.00

**Snow Flake**  
1 qt. cans, per doz. \$2.00; 2 qt., \$3.20;  
1 gal. cans per doz. \$6.00; 3 gal. \$16.00; 5 gal. \$24.00

**Grindstones**  
Bicycle Emery, Grinder..... \$0.50  
Bicycle Grindstones, each..... \$2.50 @ 3.00  
Pike Mfg. Co.:  
Improved Family Grindstones, per inch, per doz..... \$2.00 33½¢  
Pike Mower: Knife and Tool Grinders, each..... \$0.50

**Velox Ball Bearing, mounted, Angle Iron Frames**..... each, \$3.25  
**Guards Snow**  
Cheve and Wire Se. ing Co.:  
Galv. Steel 1000..... \$18.00  
Copper 1000..... \$18.00

**Cun Powder—See Powder**  
**Hack Saws—See Saws**  
**Hafts Awl**  
Peg Patent, Leather Top..... \$4.90 @ 5.25  
Peg Patent, Plain Top..... \$5.50 @ 5.75  
Sewing, Brass Ferrule..... \$1.50 @ 1.60  
Saddlers', Brass Ferrule..... \$1.35 @ 1.45  
Peg, Common..... \$1.25 @ 1.35  
Brad, Common..... \$1.50 @ 1.75

**Halters and Ties**  
Covert Mfg. Co.:  
Web..... 45¢ 2¢  
Jute Rope..... 45¢ 2¢  
Sisal Rope..... 30¢ 4¢  
Covert's Saddlery Works:  
Web and Leather Halters..... 70¢  
Jute and Manila Rope Halters..... 70¢  
Sisal Rope Halters..... 60¢ 20¢  
Jute, Manila and Cotton Rope Ties..... 70¢  
Sisal Rope Ties..... 60¢ 20¢

**Hammers**  
**Handled Hammers**  
Heller's Machinists..... 50¢ 50¢ 5¢  
Heller's Farriers..... 50¢ 50¢ 5¢  
Diametric Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75  
40¢ 40¢ 10¢ 10¢  
Peck, Stow & Wilcox..... 60¢  
Payette R. Plumb:  
P. Umb, A. E. Nall, 33½¢ 45¢ 33½¢ 40¢ 50¢  
Engineers' and B. S. Hand..... 50¢ 10¢ 50¢ 10¢ 10¢ 7½¢  
Machinists' Hammers..... 50¢ 10¢ 50¢ 10¢ 10¢  
Riveting and Tinner's..... 40¢ 7½¢ 40¢ 10¢ 7½¢  
Sargent's C. S. New List..... 40¢

**Heavy Hammers and Sledges**  
3 lb. and under..... lb. 15¢ 75¢ 10¢ 5¢  
3 to 5 lb..... lb. 35¢ @ 1.3  
Over 5 lb..... lb. 30¢  
W. H. Kinison's Smiths..... 9½¢ 10¢ 10¢

**Handcuffs and Leg Irons**  
See Police Goods  
**Handles**  
**Agricultural Tool Handles**  
3½, Pick, etc..... 50¢ 50¢ 10¢ 5¢  
Hoe Rake, Fork, etc..... 60¢ 60¢ 5¢  
Shovel, etc., Wood D Handles 50¢ 10¢ 10¢  
**Cross-Cut Saw Handles**  
Atkins..... 40¢ 5¢  
Champion..... 45¢ 40¢ 10¢  
Dixson's..... 50¢  
**Mechanics' Tool Handles**  
Auger, assorted, gro. \$2.30 @ \$2.50  
Brad Axl..... gro. \$1.25 @ \$1.50

**Chisel Handles**  
Apple Tanged Firmer, gro. ass'd. \$2.25 @ \$2.35; large, \$2.50 @ \$2.50  
Hickory Tanged Firmer, gro. ass'd. \$1.75 @ \$2.20; large, \$3.50 @ \$3.70  
Apple Socket Firmer, gro. ass'd. \$1.70 @ \$1.85; large, \$3.00 @ \$3.25  
Hickory Socket Firmer, gro. ass'd. \$1.80 @ \$1.75; large, \$1.75 @ \$2.00  
Hickory Socket Framing, gro. ass'd. \$2.50 @ \$2.75; large, \$2.85 @ \$3.35  
File, assorted..... gro. \$1.00 @ \$1.15  
Hammer, Hatchet, Axe, etc..... 60¢  
F. and Saw, Varished, doz. 70¢ 75¢  
Not Varished..... 55¢ 60¢  
Plane Handles:  
Tack doz. 25¢; Jack Bolter..... 55¢ 60¢  
Fore, doz. 35¢ 38¢; Fore, Bolted..... 70¢ 75¢  
Mullers Falls Adj. and Hatchet Auger Handles..... 15¢ 10¢  
Nicholson Simplicity File Handle, 3 870..... 90¢ 35¢ @ 1.50

**Hangers**  
Barn Door, New Pattern, Round Groove, Regular:  
Inch..... 3 4 5 6 8  
Doz..... \$0.85 1.20 1.50 1.90 2.30

**Barn Door, New England Pattern, Check Back, Regular:**  
Inch..... 3 4 5 6  
Doz..... \$1.30 1.75 2.50 3.00

**Chicago Spring Butt Co.**  
Friction..... 25¢  
Oscillating..... 25¢  
Big Twin..... 25¢  
Chisholm & Moore Mfg. Co.:  
Baggage Car Door..... 50¢  
Elevator..... 40¢  
Railroad..... 55¢

**Columbian Hdw. Co.**  
American Trackless..... 33½¢ 19¢  
Cronk Hinger Co.:  
Loose Axle..... 60¢  
Roller Bearing..... 60¢ 10¢

**Lane Bros. Co.**  
Parlor Ball Bearing..... \$4.15  
Parlor Standard..... \$3.35  
Parlor New Model..... \$2.85  
Parlor New Champion..... \$2.25  
Barn Door, Standard, 50¢ 10¢ 10¢ 5¢  
Covered..... 50¢ 10¢ 10¢  
Sneal..... 50¢ 10¢ 10¢ 5¢

**Lawrence Bros.**  
Advance..... 60¢  
Cleveland..... 70¢  
Crown..... 60¢  
New York..... 60¢  
Peerless..... 60¢ 10¢  
Sterling..... 60¢

**McIntyre & Co.**  
No. 1, Special, \$15..... 60¢ 10¢  
No. 2, Standard, \$18..... 60¢ 10¢  
Myers' Stay on Hangers and Track, 50¢ 10¢ (net)

**Stowell Mfg. and Foundry Co.**  
Atlas Parlor Ball Bearing..... 40¢  
Atlas..... 40¢  
Badger Barn Door..... 50¢  
Baggage Car Door..... 50¢  
Climax Anti-Friction..... 50¢  
Elevator..... 40¢  
Express..... 50¢  
Interstate..... 50¢  
Landy Parlor Door..... 50¢  
Mazic..... 50¢  
Matchless..... 60¢  
Nansen..... 60¢ 10¢  
Railroad..... 50¢  
Street Car Door..... 50¢  
Steel, Nos. 300, 404, 500..... 40¢ 5¢  
Stowell Parlor Door..... 50¢  
Wild West, Nos. 300, 404, 500..... 50¢  
Zenith for Wood Track..... 50¢

**Taylor & Boggus Foundry Co.**  
Kidd's..... 50¢ 15¢ 10¢ 5¢  
Wilcox Mfg. Co.:  
Bike Roller Bearing..... 60¢ 10¢  
C. Roller Bearing..... 60¢ 10¢  
Cycle Ball Bearing..... 50¢  
Dwarf Ball Bearing..... 40¢  
Ives, Wood Track..... 60¢ 10¢  
L. T. Roller Bearing..... 60¢ 10¢ 5¢  
New Era Roller Bearing..... 50¢ 10¢  
O. K. Roller Bearing..... 60¢ 10¢ 5¢  
Prindle, Wood Track..... 60¢  
Richards' Wood Track..... 60¢  
Richards' Steel Track..... 50¢ 10¢  
Spencer Roller Bearing..... 60¢ 10¢  
Tandem Nos. 1 and 2..... 60¢  
Underwriters' Roller Bearing..... 40¢  
Velvet..... 40¢  
Wilcox Automobile Bearing..... 30¢  
Wilcox Barn Trolley No. 123..... 40¢  
Wilcox Elevator Door Hangers, Nos. 112 and 123½..... 50¢  
Wilcox Elevator Door Hangers, No. 132..... 40¢  
Wilcox Fire Trolley, Roller..... 40¢  
Wilcox L. & Boy Roller Ball Bearing..... 40¢  
Wilcox New Century..... 50¢ 10¢ 10¢  
Wilcox O. K. Steel Track..... 50¢  
Wilcox O. K. Trolley..... 50¢  
Wilcox Trolley Ball Bearing..... 40¢  
Wilcox Wiseman Narrow Gauge Ball Bearing..... 40¢

**Harness Menders**  
**Harness Snaps—See Snaps**  
**Hasps**  
Meklin's Perfect Hasp 1 doz. 50¢  
Wrought Hasps, Staples, &c.—See Wrought Goods

**Hatchets**  
Best Brands..... 50¢ 50¢ 10¢  
Cheaper Brands..... 60¢ 60¢ 10¢  
Note—Net prices often made.

**Hay and Straw Knives**  
See Knives  
**Hinges**  
**Blind and Shutter Hinges**  
Surface Gravity Locking Blind:  
(Victor; National; 1888 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo.)  
No..... 1 3 5  
Doz. pair..... \$0.75 1.45 2.90  
Mortise Shutter:  
(L. & P. O. S. Dixie, etc.)  
No..... 1 1½ 2 3  
Doz. pair..... \$0.60 .55 .52 .45  
Mortise Reversible Shutter, (Buffalo, etc.)  
No..... 1 1½ 2  
Doz. pair..... \$0.55 .50 .55

**North's Automatic Blind Fixtures, No. 2, for Wood, \$0.90; No. 3, for Brick, \$1.10**  
Parker..... 70¢ 75¢  
Reading's Gravity..... 70¢ 10¢  
Sargent's, Nos. 1, 3, 5, 11 & 14..... 70¢ 10¢ 70¢ 20¢  
Stanley's Steel Gravity Blind Hinges, 3 doz. sets, without screws, \$0.80; with screws, \$1.15

**Wrightsville Hdw. Co.**  
O. S. Lull & Porter..... 30¢ 24¢  
Acme, Lull & Porter..... 75¢ 10¢  
Queen City Reversible..... 75¢ 10¢  
Stenger's Positive Locking, Nos. 1 & 2..... 70¢ 65¢  
Shepard's Noiseless, Nos. 91, 93, 95..... 70¢ 10¢

**Niagara, Gravity Locking, Nos. 1, 3 & 5**  
1908, Old Pat'n, Nos. 1, 3 & 5..... 75¢ 7½¢  
Tip Pat'n, Nos. 1, 3 & 5..... 75¢ 7½¢  
Buffalo Gravity Locking, Nos. 1 & 2..... 75¢ 7½¢  
Shepard's Double Locking, Nos. 20 & 25..... 70¢ 10¢  
Champion Gravity Locking, No. 75..... 75¢ 7½¢  
Steamboat Gravity Locking, No. 10..... 75¢ 7½¢

**Pioneer, Nos. 060, 45 & 5½**..... 75¢ 7½¢  
**Empire, Nos. 101 & 103**..... 70¢ 7½¢  
**W. H. Co.'s Mortise Gravity Locking, No. 2**..... 60¢ 10¢

**Gate Hinges**  
Clark's or Shepard's—Doz. sets:  
No..... 1 3 3  
Hinges with Latches..... \$1.30 1.30 2.65  
Hinges only..... \$1.30 1.30 2.00  
Latches only..... 60 .60 .65

**New England:**  
With Latch..... doz. @ \$1.55  
Without Latch..... doz. @ \$1.35  
Reversible Self-Closing:  
With Latch..... doz. @ \$1.30  
Without Latch..... doz. @ \$1.45

**Western:**  
With Latch..... doz. \$1.40 @ 1.75  
Without Latch..... doz. \$0.95 @ 1.30  
Wrightsville Hdw. Co.:  
Shepard's or Clark's, doz. sets:  
No. 1 2 3  
Hinges with Latches..... \$1.30 2.00 2.75  
Hinges only..... 1.30 1.50 2.10  
Latches only..... .65 .65 .70

**Spring Hinges**  
Holdback, Cast Iron, gro. \$3.00 @ 3.50  
Non-Holdback, Cast Iron gro. \$7 @ 7.50  
J. Bardley:  
Bardley's Patent Checking..... 15¢  
Bommer Bros.:  
Bommer Ball Spring Floor Hinges..... 40¢  
Bommer Spring Hinges..... 40¢  
Chicago Spring Butt Co.:  
Chicago..... 25¢  
Floor Hinge..... 30¢  
Garden City Engine Floor Hinge..... 25¢  
Keene's Saloon Door..... 25¢  
Triple End..... 50¢

**Columbian Hdw. Co.**  
Acme, Wrt. Steel..... 30¢  
Acme, Brass..... 20¢  
American..... 30¢  
Columbia, No. 14..... 30¢  
Columbia, No. 18..... 30¢  
Columbia, Adjustable..... 30¢  
Gem, new list..... 25¢  
Clover Leaf..... 30¢  
Oxford new list..... 25¢

**Hoffman Hinge & Foundry Co.**  
No. 70, 74, Holdback Detachable \$3.50  
**Lawson Mfg. Co.**  
Matchless..... 35¢  
Matchless Pivot..... 45¢  
Payson Mfg. Co.:  
Oblique..... 50¢ 10¢  
Shelby Spring Hinge Co.:  
Upright Jam Hinge..... 40¢  
Chief Ball Bearing Floor Hinge..... 45¢  
Royal Ball Bearing Floor Hinge..... 45¢

**Stover Mfg. Co.**  
Ideal, No. 16, Detachable, 30¢ 12.50  
Ideal, No. 4..... 30¢  
New Idea No. 1..... 30¢  
New Idea, Double Acting..... 45¢

**Wrought Iron Hinges**  
Strap and T Hinges, etc., list Mar. 15, 1901:  
Light Strap Hinges..... 70¢  
Heavy Strap Hinges..... 75¢ 10¢  
Light T Hinges..... 60¢ 5¢  
Heavy T Hinges..... 60¢ 5¢  
Extra Heavy T Hinges..... 75¢  
Hinge Haps..... 55¢  
Cor. Ex. Heavy Strap..... 75¢ 10¢  
Cor. Ex. Heavy T..... 75¢

**Screw Hook, 1½ to 2½ in.**..... lb. 3 c  
**Strap, 22 to 36 in.**..... lb. 24 c  
**Screw Hook and Eye:**  
¾ to 1 inch..... lb. 5 c  
1 to 1½ inch..... lb. 6 c  
1½ to 2 inch..... lb. 7 c

**Miscellaneous**  
Hoffman's Steel Spring Butt Hinges..... 40¢ 10¢  
Hoffman's Offset Refrigerator Hinges..... 40¢ 10¢

**Hods, Coal**  
Galv. Open..... \$2.70 3.00 3.30 3.60 3 doz.  
Jap. Open..... \$2.10 2.40 2.70 3.00 3 doz.  
Galv. Funnel..... \$3.30 3.60 3.90 4.20 3 doz.  
Jap. Funnel..... \$3.70 3.00 3.30 3.60 3 doz.

**Hoes—Eye**  
Scovill and Oval Pattern..... 60¢ 55¢ 60¢ 10¢ 5¢  
Grub, list Feb. 23, 1899..... 70¢ 70¢ 10¢  
D. & H. Scovill..... 35¢

**Handled**  
Sept. 1, 1900, List:  
Field and Garden..... 75¢ 2½¢  
Ladies', Boys', Toy and Union..... 70¢ 10¢ 10¢  
Street and Mortar..... 75¢ 7½¢ 2½¢  
Cotton..... 70¢ 10¢ 10¢ 5¢ 2½¢  
Planters..... 70¢ 30¢  
Weeding..... 70¢  
Note—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.

**Ft. Madison Crucible Garden Hoe**..... 75¢ 25¢  
**Ft. Madison Crescent Cultivator Hoe**..... 75¢ 10¢ 25¢  
**Ft. Madison Mattock Hoe:**  
Regular Weight..... 3 doz. \$4.50  
Junior Size..... 3 doz. \$4.00  
Ft. Madison Sprouting Hoe, 3 doz. \$4.80  
Ft. Madison Dixie Tobacco Hoe, 75¢ 20¢  
Kretzinger's Cut Easy, per doz..... 75¢ 25¢  
Warren Hoe..... 60¢  
W. & C. Ivanhoe..... 75¢ 25¢  
Acme Weeding..... 75¢ 10¢ 25¢  
W. & C. Lightning Shufflo Hoe, 3 doz. \$4.85

**Hog Rings and Ringers**  
See Rings and Ringers  
**Hoisting Apparatus**  
See Machines, Hoisting  
**Hollow Ware**  
See Ware, Hollow  
**Holders—Bit**  
Angular, 3 doz. \$24.00..... 45¢ 10¢  
Empire..... 60¢

**File and Tool**  
Nicholson File Holders and File Handles..... 33½¢

**Hooks—Cast Iron**  
Bird Cage, Reading..... 60¢  
Bird Cage, Sargent's List..... 60¢  
Celling, Sargent's List..... 40¢ 10¢  
Clothes Line, Hoffman's..... 40¢ 10¢  
Clothes Line, Reading List..... 40¢ 10¢

**Clothes Line, Sargent's List**..... 5¢ 10¢ 65¢ 10¢ 10¢  
**Coat and Hat, Sargent's List**..... 45¢ 10¢  
**Clothes Line, Stowell's**..... 70¢  
**Coat and Hat, Stowell's**..... 70¢  
**Coat and Hat, Reading**..... 70¢ 75¢  
**Coat and Hat, Wrightsville**..... 65¢ 10¢  
**Harness, Reading List**..... 70¢ 10¢ 75¢

**Wire**  
Bell..... 80¢  
Wire C. & H. Hooks..... 60¢ 10¢ 60¢ 10¢ 5¢  
Atlas Coat and Hat..... 45¢  
Single Cases..... 45¢ 10¢  
10 Case Lots..... 45¢ 10¢  
Czar Harness..... 50¢ 10¢ 50¢  
Wire Coat and Hat..... 60¢  
Acme..... 60¢  
B. B. Chief and Czar..... 10¢  
Gem..... 60¢  
Bright Wire Goods—See Wire

**Wrought Iron**  
Box, 6 in., per doz. \$1.50; 8 in., \$1.75; 10 in., \$2.00.  
Cotton..... doz. \$1.95 @ 1.25  
Wrought Staples, Hooks, &c.—See Wrought Goods

**Miscellaneous**  
Bush, Light, doz. \$5.50; Medium, \$6.00; Heavy, \$6.50  
Grass..... Nos. 1 3 4  
Best..... \$1.50 1.75 2.00  
Common..... \$1.30 1.50 1.60  
Potato and Manure..... 70¢  
Whiffletree..... lb. 4½¢  
Hooks and Eyes:  
Brass..... 60¢ 10¢ 10¢ 70¢  
Malleable Iron..... 70¢ 55¢ 70¢ 10¢  
Covert Saddlery Works' Self Locking Gate and Door Hook..... 60¢  
Crown Picture..... 50¢ 10¢  
Bench Hooks—See Bench Stops  
Corn Hooks—See Knives, Corn

**Horse Nails—See Nails, Horse**  
**Horseshoes**  
See Shoes, Horse  
**Hose Rubber**  
Garden Hose, ¾-in.:  
Competition..... ft. 1¼ @ 1¼¢  
3-ply Standard..... ft. 5 @ 6 c  
4-ply Standard..... ft. 8 @ 9 c  
3-ply extra..... ft. 9 @ 10 c  
4-ply extra..... ft. 11 @ 11 c  
Cotton Garden, ¾-in., coupled:  
Low Grade..... ft. 6 @ 7 c  
Fair quality..... ft. 3 @ 9 c

**Irons—Sad**  
From 4 to 10..... lb. 3¼ @ 3c  
B. B. Sad Irons..... lb. 3¼ @ 3c  
Chinese Laundry..... lb. 50¢ 1¼¢  
Chinese Sad..... lb. 3¼ @ 3c  
Mrs. Potts', per set:  
Nos. 50 55 60 65  
66 70c 60¢ 65¢ 75¢ 80c 70¢ 75¢  
New England Pressing, lb. 3¼ @ 3c

**Soldering**  
Soldering Copper..... 18¢ 19¢  
2 lb. and up..... 20¢ 21¢  
Covert Mfg. Co..... 20¢ 21¢  
Smith & Hemenway Co's Sets..... 70¢

**Pinking**  
Pinking Irons..... doz. 60¢ 60¢  
**Jack Screws—See Screws**  
**Jacks, Wagon**  
Covert Mfg. Co., Steel..... 45¢ 25¢  
Covert's Saddlery Works:  
Daisy..... 60¢ 10¢  
Victory..... 60¢ 10¢  
Lockport..... 40¢ 40¢ 10¢  
Lane's Steel..... 30¢ 10¢

**Kettles**  
Brass, Spun, Plain..... 30¢ 25¢  
Enameled and Cast Iron—See Ware, Hollow  
**Knife Sharpeners**  
See Sharpeners, Knife  
**Knives**  
**Butcher, Shoe, &c.**  
Foster Bros' Butcher, &c..... 30¢  
Hartzell Cutlery Co..... 30¢ 5¢  
Smith & Hemenway Co..... 40¢ 10¢  
Hay and Straw—See Hay Knives

**Corn**  
Ft. Madison Cut Easy, 3 doz. \$3.95  
Wrightington Acme, 3 doz. \$3.85; Dent, \$2.75; Adj. Serrated, \$3.20; Serrated, \$3.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15

**Drawing**  
Standard List..... 70¢ 50¢ 70¢ 10¢  
Adjustable Handle..... 35¢  
Brayley's..... 35¢  
C. E. Jennings & Co. Nos. 45, 46, 60¢ 10¢  
Jennings & Griffin, Nos. 51, 53, 60¢ 10¢ 10¢  
Swan's..... 70¢ 10¢ 24¢  
Watrous..... 16½¢ 10¢  
L. & J. White..... 20¢ 5¢ 25¢

**Hay and Straw**  
Lightning..... per doz. \$5.00 @ 5.25  
Ivan's Sickle Edge..... 3 doz. \$11.00  
Ivan's Serrated..... 3 doz. \$11.00  
Maine..... 3 doz. \$8.50

**Mincing**  
Buffalo..... 3 doz. \$15.00  
**Miscellaneous**  
Farriers'..... doz. \$3.00 @ 3.00  
Wostenholm's..... 3 doz. \$3.00 @ 3.25

**Knobs**  
Base, 2¼-in., Birch, or Maple, Rubber tip, gro. \$1.10 @ 1.20  
Carriage, Jap. all sizes, gro. 30¢ 35¢  
Door, Mineral..... doz. 60¢ 65¢  
Door, Por. Jap'd..... doz. 60¢ 70¢  
Door, Por. Nickel..... doz. \$2.00 @ 2.10  
Bardley's Wood Door, Shutter, &c., 15¢  
Picture, Sargent's..... 60¢ 10¢

**Lacing Leather**  
See Belting Leather  
**Ladders Step Etc.**  
Goshen Mfg. Co.'s Step, etc..... 60¢  
Lane's Store..... 25¢

Myers' Noiseless Store Ladders.....50%  
**Ladies' Melting—**  
 L. & G. Mfg. Co.....25%  
 P. & W.....50%  
 Reading.....60%  
 Sargent & Co.....45&10%

**Lanterns—Tubular—**  
 Regular Tubular.....doz. \$4.50@4.75  
 Left Tubular.....doz. \$4.75@5.25  
 Hinge Tubular.....doz. \$4.75@5.25  
 Other Styles.....doz. \$4.00@4.50  
**Bull's Eye Police—**  
 No. 1, 2 1/2 inch.....\$5.00@5.75  
 No. 2, 3 inch.....\$4.75@5.00

**Latches—Thumb—**  
 Roggin's Latches.....doz. \$0.30@33¢  
**Lawn Mowers—**  
 See Mowers, Lawn.

**Leaders—Cattle—**  
 Small.....doz. 55¢; large, 60¢  
 Covert Mfg. Co.....45&25%

**Lemon Squeezers—**  
 See Squeezers, Lemon.  
**Lifters, Transom—**  
 Solid grip, Payson Mfg. Co.....80%  
 R. & E. Mfg. Co.....35&25%

**Lines—**  
 Wire Clothes, Nos. 18 19 20  
 100 feet.....\$2.20 2.00 1.65  
 75 feet.....\$1.80 1.70 1.30

**Onsaw Mills—**  
 Crown Solid Braided Chalk.....33&45%  
 Mason's, No. 0 to No. 5.....33&25%  
 Samson Corrugate Works;  
 Solid Braided Chalk, No. 0 to 3.....40%  
 Silver Lake Braided Chalk, No. 0, \$0.00;  
 No. 1, \$0.50; No. 2, \$7.00; No. 3, \$7.50  
 per gr.....30%

**Locks—Cabinet—**  
 Cabinet Locks.....35%@55%  
**Door Locks, Latches, &c.—**  
 [Net prices are very often made on  
 these goods.]  
 Reading Hardware Co.....50%  
 R. & E. Mfg. Co.....40%  
 Sargent & Co.....40@40&10%

**Elevator—**  
 Stowell's.....40%

**Padlocks—**  
 Wrought Iron.....75¢10¢5¢30¢5¢  
 R. & E. Mfg. Co. Wrt. Steel and Brass.....75¢75&10%

**Sash, &c.—**  
 Fitch's:  
 Bronze and Brass.....60&45%  
 Iron.....70%  
 Iron Pallets.....60%  
 Bronze and Brass.....60%  
 Wrought Bronze and Brass.....55&5%  
 Wrought Steel.....60%  
 Payson's Signal.....60%  
 Reading.....60&10&10@70%

**Machines—Boring—**  
 Common, Upright, Without Augers.....\$2.00  
 Common, Angular, Without Augers.....\$2.25

**Without Augers.**  
 R. & E. Mfg. Co.: Upright. Angular.  
 Improved No. 3, \$4.25 No. 1, \$5.00  
 Improved No. 4, 3.75 No. 2, 3.38  
 Improved No. 5, 2.75  
 Jennings' No. 4, 3.50 No. 1, 3.50  
 Miller's Falls.....5.75  
 Snell's, Rice's Pat. 2.50 2.75

**Holisting—**  
 Moore's Anti-Friction Differential Pulley Block.....30%  
 Moore's Hand Hoist, with Lock Brake.....30%  
 Moore's Portable Pneumatic Hoist.....25%

**Ice Cutting—**  
 Chandler's.....15&10%

**Washing—**  
 Wayne American.....doz. \$28.00  
 Western Star, No. 2.....doz. 28.00  
 Western Star, No. 3.....doz. 30.00  
 St. Louis, No. 41.....doz. 60.00

**Mallets—**  
 Hickory.....45&50%  
 Lignumvite.....45&50%  
 Timmers', Hickory and Applewood, doz.....50@55¢

**Matte—Door—**  
 Elastic Steel (W.G. Co.).....10%

**Mattocks—**  
 See Picks and Mattocks.  
**Meat Cutters—**  
 See Cutters, Meat.

**Milk Cans—See Cans, Milk**  
**Mills—Coffee—**  
 Enterprise Mfg. Co.....25@30%  
 National, list Jan. 1, '94.....30%  
 Parker's Columbia and Victor.....50&10@60%

**Parker's Box and Slide—**  
 Swift, Lane Bros Co.....30%

**Mincing Knives—**  
 See Knives, Mincing.  
**Molasses Gates—**  
 See Gates, Molasses.

**Money Drawers—**  
 See Drawers, Money.  
**Mowers Lawn—**  
 Net prices are generally quoted.

**Cheap—**  
 all sizes, \$1.90@1.95  
**Good—**  
 all sizes, \$2.25@2.50

**High Grade—**  
 4.25 4.50 4.75 5.00  
 Continental.....60&10&5%  
 Great American.....30&25%  
 Great American Ball Bearing.....30&10&5%  
 Quaker City.....20&25%  
 Pennsylvania.....30&10&5%  
 Pennsylvania Golf.....50%  
 Pennsylvania Horse.....40%  
 Pennsylvania Pony.....45%  
 Philadelphia.....70&25%

**Style A, all Steel—**  
 Style E, Low Wheel.....60&10%  
 Style F, High Wheel.....70&10&5%  
 Drexel and Gold Coin, low list.....50&25%

**Nails—**  
 Cut and Wire. See Trade Report.  
 Wire Nail and Brads, Papered.  
 List July 30, 1899, 85¢10¢85¢10¢10%

**Hungarian, Finishing, Upholsterers', &c. See Tacks.**

**Horse—**  
 Nos. 6 7 8 9 10  
 A.C.....25¢25¢25¢25¢25¢  
 Ausable.....25¢25¢25¢25¢25¢  
 C.B.K.....25¢25¢25¢25¢25¢  
 Champion.....25¢25¢25¢25¢25¢  
 Clinton.....19¢17¢16¢15¢14¢  
 Maud S.....25¢25¢25¢25¢25¢  
 Putnam.....33¢21¢20¢19¢18¢  
 Vulcan.....23¢21¢20¢19¢18¢  
 American, Nos. 5 to 10.....9¢9¢4¢  
 Neponset.....Nos. 5 to 10.....10¢10¢12¢  
 Jobbers' special brands.....per lb. 9¢9¢

**Picture—**  
 1 1/2 2 2 1/2 3 3 1/2 in.  
 Brass Head.....45¢60¢70¢95¢1.00 gro.  
 Por. Head.....1.10 1.10 1.10 1.10 1.10 gro.

**Nippers, See Pliers and Nippers.**  
**Nut Crackers—**  
 See Crackers, Nut.

**Nuts—**  
 Cold Punched: Off list.  
 Mfrs. or U. S. Standard.  
 Square, plain.....\$4.70@4.80  
 Hexagon, plain.....\$5.00@5.10  
 Square, C. T. & R.....\$5.30@5.40  
 Hexagon, C. T. & R.....\$5.50@5.60  
 Hot Pressed:  
 Mfrs. U. S. or Nar. Gauge Stan'd.  
 Square Blank.....\$5.00@5.10  
 Hexagon Blank.....\$5.30@5.40  
 Square Tapped.....\$5.80@5.90  
 Hexagon Tapped.....\$5.10@5.20

**Oakum—**  
 Best or Government.....lb. 6¢4¢  
 Navy.....lb. 5¢  
 U. S. Navy.....lb. 6¢4¢  
 Plumbers' Spun Oakum.....2¢4¢  
 In carload lots 1/4 lb. off f.o.b. New York.

**Oil Axle—**  
 Snow Flake:  
 1 pt. cans, per doz.....\$3.00  
 1 qt. cans, per doz.....\$4.80  
 1 gal. cans, per doz.....\$15.00  
 5 gal. cans, per doz.....\$60.00

**Oil Tanks—See Tanks, Oil.**  
**Oilers—**  
 Brass and Copper.....40¢10¢40¢10¢5¢  
 Tin or Steel.....60¢10¢60¢10¢5¢  
 Zinc.....60¢10¢60¢10¢5¢  
 Paragon:  
 Brass and Copper.....40¢10¢  
 Tin or Steel.....60¢10¢  
 Zinc.....60¢10¢  
 Malleable, Hammers Improved, No. 1, \$3.00; No. 2, \$4; No. 3, \$4.40 per doz. 20%  
 Malleable, Hammers' Old Pattern, same list.....50&10%  
 Wilcox & Hobbs Mfg. Co.:  
 Spring Bottom Cans.....70¢70¢10%  
 Railroad Oilers etc.....60¢60¢10%

**Openers—Can—**  
 French.....doz. 35¢  
 Iron Handle.....doz. 25¢27¢  
 Sprague, Iron Hdl., per doz. 35¢40¢  
 Sardine Scissors.....doz. \$1.75@5.00  
 Tip Top.....per doz. \$0.75  
 National, per gro.....\$1.75@2.00  
 Stowell's.....per doz. 35¢45¢  
 Waldorf, per gro.....\$3.65

**Openers—Can—**  
 Nickel Plate.....per doz., \$2.25  
 Silver Plate.....per doz., \$3.50

**Packing—**  
 Asbestos Packing, Wick and Rope, 15¢15 1/2 lb.

**Rubber—**  
 Sheet, C. I.....8¢12¢  
 Sheet, C. O. S.....9¢15¢  
 Sheet, C. B. S.....10¢14¢  
 Sheet, Pure Gum.....50¢70¢  
 Sheet, Red.....35¢40¢  
 Jenkins' Standard, 7 1/2 8 1/2.....35¢35¢5¢  
**Miscellaneous—**  
 American Packing.....7¢10¢lb.  
 Cotton Packing.....15¢14¢lb.  
 Italian Packing.....10¢14¢lb.  
 Jute.....3¢1¢lb.  
 Russia Packing.....7¢11¢lb.

**Pails—**  
 S. S. & Co., with gauges, No. 1 \$0.50;  
 No. 2, \$3.75 per doz.

**Galvanized—**  
 Price per doz.  
 Quail.....10 12 14  
 Water, Regular.....1.75 2.00 2.25  
 Water, Heavy.....2.50 3.00 3.50  
 Fire, Rd. Bottom.....2.25 2.50 3.00  
 Well.....2.50 3.00 3.50

**Pans—Dripping—**  
 Standard List.....50¢10¢50¢20%

**Fry—**  
 Common Lipped:  
 No. 1 2 3 4 5  
 Per doz. \$0.60 .75 .85 .95 1.15  
**Roasting and Baking—**  
 Regal, S. S. & Co., per doz. Nos. 5, \$4.50;  
 10 \$5.00; 20 \$5.50; 30 \$6.00.  
 Simplex, per gro. No. 40 \$30.00; 50, \$34.50; 60 \$39.00; 140, \$33.00; 150, \$37.50; 160, \$43.00.

**Paper—Building Paper—**  
 Asbestos.....lb.  
 Building Felt.....3¢  
 Mill Board, sheet, 10 x 10 inches.....1¢  
 Mill Board, roll, thicker than 1-16 inch.....3¢  
 Mill Board, roll, 1-16 in. thick and less.....3¢

**Per roll**  
 Rosin Sized Sheathing: 500 sq. ft.  
 Light wt. 25 lbs. to roll.....\$0.40  
 Medium wt. 30 lbs. to roll.....\$0.47  
 Heavy wt. 40 lbs. to roll.....\$0.60  
 Medium Grades Water Proof Sheathing.....\$0.55@1.25  
 Deafening Felt, 6 and 1 1/2 sq. ft. to lb. ton.....\$4.00@4.50  
 Red Rope Roofing, 250 sq. feet per roll.....\$1.65

NOTE.—These goods are often sold at delivered prices.

**Tarred Paper.**  
 1 ply (roll 300 sq. ft.), 10 in.....\$2.00@32.00  
 2 ply, roll 103 sq. ft.....55¢65¢  
 3 ply, roll 103 sq. ft.....71¢87¢  
 Slater's Felt (roll 500 sq. ft.).....70¢

NOTE.—Above prices often include delivery.  
 K. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....\$2.75

**Sand and Emery—**  
 List Dec. 25, 1899.....60¢60¢10%

**Parers—Apple—**  
 Advance.....doz. \$4.50  
 Baldwin.....doz. \$5.00  
 Bonanza.....each \$5.00  
 Dandy.....each \$7.50  
 Eureka, 1898.....each \$16.00  
 Family Bay State.....doz. \$12.00  
 Hudson's Little Star.....doz. \$4.00  
 Hudson's Rocking table.....doz. \$5.50  
 Improved Bay State.....doz. \$7.00@30.00  
 New Lightning.....doz. \$5.50  
 Reading 72.....doz. \$4.00  
 Reading 78.....doz. \$7.00  
 Turn Table.....doz. \$5.50  
 White Mountain.....doz. \$4.00

**Potato—**  
 Saratoga.....doz. \$5.50  
 White Mountain.....doz. \$4.50

**Paris Green—**  
 Arsenic kegs or casks.....11 1/2¢12 1/2¢  
 Kegs, 100 to 175 lbs.....12 1/2¢13¢  
 Kits, 14, 25, 55 lbs.....13 1/2¢14¢  
 Paper boxes, 5 to 10 lbs.....13 1/2¢14¢  
 Paper boxes, 1 lb.....13 1/2¢14¢  
 Paper boxes, 1/2 lb.....13 1/2¢14¢  
 Paper boxes, 1/4 lb.....13 1/2¢14¢

**Picks and Mattocks—**  
 Last Feb. 25, 1899.....70¢70¢10%

**Pigeons—Clay**  
 Markle's Black Birds, f.o.b. factory, per m.....\$3.75  
 See also Traps, Target.

**Pinking Irons—**  
 See Irons, Pinking.

**Pins—Escutcheon—**  
 Brass.....60¢60¢10%  
 Iron, list Nov. 11, '85.....60¢60¢10%

**Pipe, Cast Iron Soil—**  
 Standard, 2-6 in.....55¢7 1/2¢  
 Extra Heavy, 2-6 in.....65¢5¢  
 Fittings.....70¢10¢2 1/2¢

**Pipe, Merchant, Boiler**  
 Tubes, &c.—Galva-  
 Merchant Pipe. Black. nized.  
 1/2 to 1 1/2 inch.....50% 45%  
 3/4 to 12 inch.....64% 41%  
 Boiler Tubes. Up to 22 feet.  
 1 to 1 1/2 inch, inclusive.....47 1/2¢  
 3/4 to 5 inch, inclusive.....65%  
 1 1/2 to 2 1/2 and 6 to 13 inches.....60%  
 Iron.  
 1 to 1 1/2 inch and 2 1/2 in.....43 1/2¢  
 3/4 to 2 1/2 inch.....45%  
 1 1/2 to 13 inch.....65%  
 Casing, Cut Lengths. S. & S.  
 2 to 8 inch.....51 1/2¢  
 3/4 to 4 inch.....57 1/2¢  
 1 1/2 to 12 1/2 inch.....69 1/2¢

**Pipe Sewer**  
 Standard Pipe and Fittings, 3 to 24 in.  
 New England.....70%  
 New York and New Jersey.....75%  
 Maryland, Delaware, East Penn. 75%  
 West Penn. and West Va.....75%  
 Virginia.....75%  
 Ohio, Michigan and Ky.....75%  
 Carload lots are generally delivered.

**Planes and Plane Irons—**  
 Wood Planes—  
 Molding.....40¢2 1/2¢40¢10%  
 Bench, First quality 40¢10¢40¢10%  
 Bench, Second quality 40¢10¢40¢10%  
 Bailey's (Stanley R. & L. Co.) 25¢10¢25¢10¢10%

**Iron Planes—**  
 Bailey's (Stanley R. & L. Co.).....25¢10¢25¢10¢10%  
 Chaplin's Iron Planes.....25¢10¢25¢10¢10%  
 Miscellaneous Planes (Stanley R. & L. Co.).....25¢10¢25¢10¢10%  
 Sargent's (Stanley R. & L. Co.).....25¢10¢25¢10¢10%

**Plane Irons—**  
 Wood Bench Plane Irons.....20¢5¢30¢10¢5¢  
 Buck Bros.....20¢10¢20¢10¢10%  
 Stanley R. & L. Co. 20¢10¢20¢10¢10%  
 L. & J. White.....20¢25¢25%

**Planters, Jern, Hagg.**  
 Kohler's Eclipse.....per doz. \$0.00

**Plates—**  
 Felloe.....lb. 3 1/4¢4¢  
 Self-Sealing Pie Plates (S. S. & Co.), per doz. \$3.00.....50%

**Pliers and Nippers—**  
 Button Pliers.....75¢75¢10%  
 Gas Burner, per doz., 5 in., \$1.15@  
 \$1.20; 6 in., \$1.35@1.45  
 Gas Pipe.....7 8 10 12 in.  
 \$1.75 \$2.00 \$2.75 \$3.75  
 Acme Nippers.....50¢50&5%

**Paralle Pliers, &c.—**  
 Paragon Pliers.....50&25%  
 Lodi Pliers.....50&25%  
 Elm City Fence Pliers.....35%  
 American Button.....75&10%  
 Cronk's.....60%  
 Improved Button.....70&10%  
 Stub's Pattern.....50%  
 Combination and others.....25%

**Reiler's Warriors' Nippers, Pliers, &c.—**  
 P. & W. Tanners' Cutting Nippers.....30¢30&10%  
 Swedish Side, End and Diagonal Cutting Pliers.....50%  
 Utica Drop Forge & Tool Co.:  
 Pliers and Nippers, all kinds.....40%

**Plumbs and Levels—**  
 Plumbs and Levels.....75¢75&10%  
 Daston's.....70%  
 C. E. Jennings & Co.'s Iron, Adjustable.....35&10%

Pocket Levels.....75&10¢10¢75&10%  
 Stanley R. & L. Co.....10¢10¢10¢10%  
 Stanley's Duplex.....20¢20&10¢10%  
 Woods' Extension.....35&45%

**Poachers, Egg—**  
 Buffalo Steam Egg Poachers, per doz. No. 1, \$7.20; No. 2, \$11.00 No. 3, \$11.00; No. 4, \$14.50.....50%

**Points, Glaziers—**  
 Bulk and 1 lb. papers.....lb. 8¢@...  
 1/2-lb. papers.....lb. 8¢@...  
 1/4-lb. papers.....lb. 9¢@...

**Pokes, Animal—**  
 Ft. Madison Hawkeye.....per doz. \$3.25  
 Ft. Madison Western.....per doz. \$3.75

**Police Goods—**  
 Manufacturers' Lists.....25¢25&5%  
 Towels.....25%

**Polish—Metal—**  
 Prestolite Liquid, No. 1 (1/2 pt.), per doz. \$3.00; No. 2 (1 qt.), \$0.75.....40%  
 Prestolite Paste.....40&10%  
 George William Hoffman  
 U. S. Metal Polish Paste, 3 oz. boxes, per doz. 50¢; per gr. \$4.50; 1/2 lb boxes, per doz. \$1.25; 1 lb boxes, per doz. \$2.25.  
 U. S. Liquid, 8 oz. cans, per doz. \$1.25; per gr. \$1.25.

**Barkeepers' Friend Metal Polish, per doz. \$1.75; per gr. \$18.00.**  
 Wynn's White Silk, 1/2 pt. cans, per doz.....\$2.00

**Stove—**  
 Black Eagle Benzine Paste, 5 lb cans.....10¢  
 Black Eagle, Liquid, 1/2 pt. cans.....doz. 75¢

**Black Jack Paste, 1/2 lb cans, per gro. \$9.00.**  
 Ladd's Black Beauty, per \$10.00.....50%  
 Joseph Dixon's, per gr. \$5.75.....10%  
 Dixon's Plumbago.....per gr. \$2.50  
 Firestone, 1/2 lb cans bulk, \$7.00; 1 lb Japanese, per gr. \$4.50.....10%  
 Jet Black.....per gr. \$3.50  
 Fearless Iron Enamel, 1/2 pt. cans.....doz. \$1.50

**Wynn's:**  
 Black Silk, 5 lb palls.....each 70¢  
 Black Silk, 1/2 lb box.....per doz. \$1.00  
 Black Silk, 5 oz. box.....doz. \$0.75  
 Black Silk, 1/2 pt. liq.....doz. \$1.00

**Poppers, Corn—**  
 Round or Square:  
 1 qt.....gro. \$7.00@7.50  
 1 1/2 qt.....gro. 9.50@10.00  
 2 qt.....gro. 10.50@11.00

**Post Hole and Tree Augers and Diggers—**  
 See also Diggers, Post Hole, &c.  
**Potato Parers—**  
 See Parers, Potato.

**Pots—Glue—**  
 Enameled.....15%  
 Tinned.....10%

**Powder—**  
 In Cans:  
 Duck, 1 lb. each.....45¢  
 Fine Sporting, 1 lb. each.....75¢  
 Rifle, 1/2 lb. each.....15¢  
 Rifle, 1 lb. each.....25¢

**In Kegs:**  
 Duck, 6 1/2 lb. kegs.....\$2.25  
 Duck, 12 1/2 lb. kegs.....\$4.25  
 Duck, 25 lb. kegs.....\$5.00  
 Rifle, 6 1/2 lb. kegs.....\$1.25  
 Rifle, 12 1/2 lb. kegs.....\$2.25  
 Rifle, 25 lb. kegs.....\$4.00

**King's Semi-Smokeless:**  
 Keg (25 lb bulk).....\$6.50  
 Half Keg (12 1/2 lb bulk).....\$3.50  
 Quarter Keg (6 1/2 lb bulk).....\$1.90  
 Case 24 (1 lb cans bulk).....\$5.50  
 Half case (1 lb cans bulk).....\$4.50  
 King's Smokeless: Mott Gun Rifle Keg (25 lb bulk).....\$12.00 \$15.00  
 Half Keg (12 1/2 lb bulk) 6.25 7.75  
 Quarter Keg (6 1/2 lb bulk) 3.25 4.00  
 Case 24 (1 lb cans bulk) 14.00 17.00  
 Half case 12 (1 lb cans bulk) 7.25 8.75

**Presses—**  
**Fruit and Jelly—**  
 Enterprise Mfg. Co.....20@25¢  
**Seal Presses—**  
 Morrill's No. 1, per doz. \$20.00.....50%  
 Morrill's No. 2, per doz. \$22.50.....50%

**Pruning Hooks and Shears—See Shears.**  
**Pullers Nail—**  
 Cyclops.....60%  
 Miller's Falls, No. 1 per doz. \$12.00.....35&10%  
 Pearson No. 1, Cyclops Spike Puller each \$5.00.....30%  
 Peucan, per doz. \$0.00.....40&10%  
 Samson.....per doz. \$18.00

**Seranton, Case Lots:**  
 No. 1 (large), per doz. \$4.50; No. 2 (large), \$5.75; No. 3 (small), \$7.00; No. 3-B (large), \$5.50; No. 3-C (small), \$7.00; No. 2-D (large), \$4.50; No. 3-D (small), \$4.00.  
 Smith & Hemenway Co.:  
 Diamond B. No. 2, ca. e lots, per doz. \$8.00  
 Diamond B. No. 3, case lots, per doz. \$5.50  
 Giant, No. 1, per doz. \$18. No. 2, \$14.50; No. 3, \$15.....40%

**Pulleys—Single Wheel—**  
 Aving.....doz. \$0.45 2 1/2 3 1/2 4 1/2  
 1 inch.....2 1/2 3 1/2 4 1/2  
 Hay Fork, Shovel or Solid Eye.....doz. \$1.35@1.50

**Hot House, doz. \$0.65 .80 1.25**  
 Screws.....doz. \$0.15 1/4 1/2 3/4  
 1 inch.....1/4 1/2 3/4  
 Side.....doz. \$0.30 .40 .55 .60  
 1 inch.....1/4 1/2 3/4  
 Tackle.....oz. \$0.30 1/4 .65 1.10  
 Stowell's:

Ceiling or End, Anti-Friction.....60%  
 Dumb Waiter, Anti-Friction.....60&10%  
 Hay Fork, Anti-Friction, 5-in. Wheel, per doz. \$12.00.....50%  
 Electric Light.....60%  
 Side, Anti-Friction.....60&10%

**Sash Pulleys—**  
 Common Frame: Square or Round  
 End per doz., 1 1/2 in., 13¢; 2 in., 16¢  
 Auger Mortise, no Face Plate, per doz. 1 1/2 in., 12¢; 2 in., 15¢.  
 Auger Mortise, with Face Plate, per doz., 1 1/2 in., 13¢; 2 in., 15¢.



Acme.....1 1/2 in., 16; 2 in., 19 1/2  
Common Sense, 1 1/2 in., 16; 2 in., 19 1/2  
No. 9, 1 1/2 in., 16; 2 in., 19 1/2  
Extra for Plated Finish..... 1/2 doz 25¢  
Extra for Anti-Friction Bronze..... 1/2 doz 20¢  
Bushing..... 1/2 doz 10¢  
Grand Rapids All Steel Noiseless..... 40¢  
Ideal No. 13..... 1 1/2 in., 16; 2 in., 19 1/2  
Niagara..... 1 1/2 in., 16; 2 in., 19 1/2  
No. 26, Troy..... 1 1/2 in., 16; 2 in., 19 1/2  
Star..... 1 1/2 in., 16; 2 in., 19 1/2  
Tackle Blocks—See Blocks.

**Pumps**—  
Cistern..... 60¢@80¢10¢  
Pitcher Spout..... 75¢@75¢10¢  
Wood..... 50¢@50¢10¢  
Pump Leathers, Lower and Plunger  
Valve—Per gro..... 2 1/2 2 1/2 2 1/2 2 1/2  
Inch..... 2 1/2 2 1/2 2 1/2 2 1/2  
Inch..... 2 1/2 2 1/2 2 1/2 2 1/2

**Punches**—  
Revolving (A tubes)..... doz. \$3.75@4.25  
Saddlers' or Drive, good..... doz. \$5.00@7.00  
Spring, single tube, good quality..... 1.65@1.75  
Bemis & Call Co.'s Cast Steel Drive..... 50¢  
Bemis & Call Co.'s Check..... 50¢  
Bemis & Call Co.'s Spring..... 50¢  
Morrell's No. 1 (A, B, C)..... doz. \$1.50@2.00  
No. 2..... doz. \$2.50@3.00  
No. 2, Metal..... doz. \$4.50@5.00  
Bench Punch, each, \$10.00..... 50¢  
Niagara Hollow Punches..... 40¢  
Niagara Solid Punches..... 55¢@1.00  
Steel Screw, B. & K. Mfg. Co..... 40¢  
Tinnars' Hollow, P. S. & W. Co..... 35¢@35¢5¢  
Tinnars' Solid, P. S. & W. Co..... 60¢

**Rail—Barn Door, &c.**—  
Cast Iron, Barn Door: Flange Screw  
Holes for Rd. Groove Wheels:  
1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2  
1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2  
Angular for Sq. Groove Wheels:  
Small, Med. Large..... 1.50 1.75 2.70 100 feet.  
Sliding Door, Brazed Wrt Iron, ft. 6 1/2  
Sliding Door, Iron Painted..... 3 1/2@3¢  
Sliding Door, Wrought Brass, 1 1/2  
in..... lb. 36¢. 30¢  
Cronk's Double Braced Steel Rail..... 3 1/2¢  
Foot..... 3 1/2¢  
Cronk's O. N. T. Rail..... 100 ft. 1 inch, \$3.10;  
1 1/2 inch, \$3.95; 1 3/4 inch, \$4.85.  
Lanes' Standard, 100 ft..... 3.75  
Lawrence Bros..... ft. 4 1/2¢  
McKinney's None Better..... ft. 3 1/2¢  
McKinney's Standard..... ft. 4 1/2¢  
Stowell's Cast Rail..... 1 1/2¢  
Stowell's Steel Rail, Plain..... 2¢  
Stowell's Wrought Bracket, Plain..... 3 1/2¢

**Rakes**—  
Net Prices, Malleable Rakes:  
Shank..... 10 12 14 16-tooth  
Socet..... \$1.65 1.90 1.95 2.10  
Sept. 1, 1900, List:  
Cast Steel..... 70¢@75¢  
Malleable..... 70¢@75¢  
Lawn Rakes; Metal Head, per doz..... 20 teeth..... \$3.25@3.50  
2 1/2 teeth..... \$3.50@3.75  
Fort Madison Red Head Lawn..... \$3.25  
Fort Madison Blue Head Lawn..... \$3.00  
Jackson Lawn, 20 and 30 teeth..... 1/2 doz. \$4.00  
Kohler's:  
Lawn Queen, 20-tooth, 1/2 doz..... \$3.00  
Lawn Queen, 24-tooth, 1/2 doz..... \$3.75  
Paragon, 20-tooth, 1/2 doz..... \$2.85  
Paragon, 24-tooth, 1/2 doz..... \$3.00  
Steel Garden, 14-tooth, 1/2 doz..... \$3.00  
Malleable Garden, 14-tooth 1/2 doz. \$2.25

**Rasps, Horse**—  
Dillon's..... 75¢  
Heiler Bros..... 75¢  
McGaffey File Co Horse Rasps, 90¢@1.00  
New Nicholson Horse Rasp..... 70¢@1.00  
See also Files.

**Razors**—  
Boracic..... 70¢  
Fox Razors, No. 42..... 1/2 doz. \$40.00  
Fox Razors, No. 44..... 1/2 d. \$34.00  
Fox Razors, No. 45, Platina, 1/2 doz..... \$24.00  
Silberstein:  
Carbo Magnetic..... \$18.00  
Griffin, No. 65..... \$15.00  
Griffin, No. 66..... \$12.00  
All other razors..... 40¢  
Safety Razors..... 40¢

**Razor Straps**—  
See Straps, Razor.

**Reels—Fishing**—  
Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Poplar and Salmon, Single Action, Multiplying and Quintriples, all sizes..... 25¢  
Hendryx Single Action Series, 102P and PN, 202P and PN, 302P and PN, 402P and PN, 502P and PN, 602P and PN, 702P and PN, 802P and PN, 902P and PN, 1002P and PN, 1102P and PN, 1202P and PN, 1302P and PN, 1402P and PN, 1502P and PN, 1602P and PN, 1702P and PN, 1802P and PN, 1902P and PN, 2002P and PN, 2102P and PN, 2202P and PN, 2302P and PN, 2402P and PN, 2502P and PN, 2602P and PN, 2702P and PN, 2802P and PN, 2902P and PN, 3002P and PN, 3102P and PN, 3202P and PN, 3302P and PN, 3402P and PN, 3502P and PN, 3602P and PN, 3702P and PN, 3802P and PN, 3902P and PN, 4002P and PN, 4102P and PN, 4202P and PN, 4302P and PN, 4402P and PN, 4502P and PN, 4602P and PN, 4702P and PN, 4802P and PN, 4902P and PN, 5002P and PN, 5102P and PN, 5202P and PN, 5302P and PN, 5402P and PN, 5502P and PN, 5602P and PN, 5702P and PN, 5802P and PN, 5902P and PN, 6002P and PN, 6102P and PN, 6202P and PN, 6302P and PN, 6402P and PN, 6502P and PN, 6602P and PN, 6702P and PN, 6802P and PN, 6902P and PN, 7002P and PN, 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<b>Twine—</b>	
<b>Miscellaneous—</b>	
Flax Twine—	BC P.
No. 9, 14 and 1/2-lb. Balls	214c 34c
No. 13, 14 and 1/2 lb. Balls	174c 194c
No. 18, 14 and 1/2-lb. Balls	154c 174c
No. 24, 14 and 1/2-lb. Balls	15 c 17 c
No. 36, 14 and 1/2-lb. Balls	144c 164c
Chalk Line, Cotton, 1/2-lb Balls	22@214c
Cotton Mops, 6, 9, 12 and 15 lb.	7@8c
doz	7@8c
Cotton Wrapping 5 Balls to lb	14c@17c
according to quality	14c@17c
American 2-Ply Hemp, 1/4 and 1/2-lb.	13@11c
Balls	13@11c
American 3 Ply Hemp, 1-lb. Balls	13@11c
India 2-Ply Hemp, 1/4 and 1/2-lb.	74c
Balls (Spring Twine)	74c
India 3-Ply Hemp, 1-lb. Balls	74c
India 3-Ply Hemp, 1/2-lb. Balls	64c
2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls	8@9c
Mason Line, Linen, 1/2-lb. Balls	15c
No. 264 Mattress, 1/4 and 1/2-lb. Balls	37c
Wool, 3 to 6 ply	5c
<b>Vises—</b>	
Solid Box	50@50&11%
<b>Parallel—</b>	
Atchul Machine Co.	
Simpson's Adjustable	40%
Standard	40%
Amateur	25%
Bonney's	40%
Columbian Hdw. Co.	40%
Fisher & Norris Double Screw	15&10%
Holland's	
Keystone	40%
Keystone	65&5%
Lewis Tool Co.	29@30%
Massey's Perfect	15&20%
Massey's	
Clincher	80@40%
Combination, Quick Adj.	40%
Woodworker's	15%
Merrill's	20%
Miller's Falls	50&10&10%
Parker's	
Victor	90&25%
Regulars	26&25%
Vulcan's	40&45%
Combination Pipe	55&60%
Prentiss	80@25%
Sargent's	40%
Snyder's X. L.	33&4%
Stephens	33&4%
<b>Saw Filers—</b>	
Bonney's, No. 1, \$13; No. 3, \$16	50%
Dixon's D 3 Clamp and Guide, 4 1/2 x 3	25%
Reading	60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3	45&50%
<b>Miscellaneous—</b>	
Signal & Keeler Combination Pipe	
Vise	60%
Parker's Combination Pipe:	
87 Series	60%
187 Series	60&5%
No. 870	50&10%
<b>Wads—Price Per M.</b>	
R. E., 11 up	80c
R. E., 9 and 10	70c
R. E., 8	80c
R. E., 7	80c
P. E., 11 up	\$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B. E., 12 and larger	\$1.60@1.75
Ely's P. E., 12 to 20	\$3.00@3.85
<b>Wagon Jacks—</b>	
See Jacks, Wagon.	
<b>Ware, Hollow—</b>	
Aluminum—	
S. S. & Co. Reduced List	40%
<b>Cast Iron, Hollow—</b>	
Stove Hollow Ware :	
Ground	65%
Unground	70%
White Enameled Ware :	
Maslin Kettles	70&10@76%
Covered Ware :	
11 and 12	100&10@104&7%
Enameled and Plain	50&10@104&5%
See also Pots, Glue.	
<b>Enameled—</b>	
Agate Nickel Steel Ware, list Nov. 1	60&30%
Iron Clad Ware	70&10%
Never Break Enameled	50&5@50&10%
<b>Tea Kettles—</b>	
Galvanized Tea Kettles :	
Inch	6 7 8 9
each	50c 50c 55c 55c
<b>Steel Hollow Ware.</b>	
Avery Spiders & Griddles	65&5@52&5%
Avery Kettles	90%
Pre-enameled	50&5@50&10%
Never Break Spiders and Griddles	65&5%
Never Break Kettles	60%
Solid Steel Spiders & Griddles	65&5%
Solid Steel Kettles	60%
Solid Steel Ware, Enameled	50&5%
<b>Washboards—</b>	
Solid Zinc	70¢
Crescent, family size, bent frame	\$3.00
Red Star, family size, stationary protector	\$3.00
Double Zinc Surface :	
Baginaw Globe, family size, stationary protector	\$3.65
Cable Cross, family size, stationary protector	\$3.00
Single Zinc Surface :	
Natalad, family size, open back perforated	\$2.40
Baginaw 14 in. protector, family size, vented	\$2.40



Brass Surface:  
Brass King, Single Surface, open  
back.....\$3.00  
Nickel Plate Surface:  
No. 1001 Nickel Plate, Single Surface.....\$3.00

**Washers—****Leather, Axle—**

Solid.....85¢10¢10¢85¢10¢10¢10¢  
Patent.....85¢10¢10¢85¢20¢  
Coil: 1/4 1 1 1/4 1 1/4 1 1/4 1 1/4  
10c 11c 12c 13c per 100  
**Iron or Steel—**  
Size bolt ... 5-18 3/4 1/2 3/4 3/4  
Washers.....\$5.70 4.80 3.50 3.30 3.10  
In lots less than one keg add 1/4c per  
lb., 5-lb. boxes add 1/4c to list.

**Cast Washers—**

Over 1/2 inch, barrel lots, per lb.....  
1 1/4¢1 3/4¢

**Washer Cutters—**

See Cutters, Washer.

**Washing Machines—**

See Machines, Washing.

**Water Coolers—**

See Coolers, Water.

**Wedges—**

Oil Finish.....lb. 2.90@3.10c

**Weights, Sash—**

Per ton, f.o.b. factory:  
Eastern District.....\$30.00@31.00

Western, Central and Southern  
Districts.....\$22.50@23.00

**Well Buckets, Galvanized**

See Pails, Galvanized.

**Wheels Well—**

8-in. \$1.45@1.65; 10-in. \$1.75@2.00;  
12-in. \$2.35@2.50; 14-in. \$3.50@3.75

**Wire and Wire Goods—**

Bright and Annealed:

6 to 9.....72 1/2¢@72 1/2¢10¢

10 to 18.....72 1/2¢10¢7 1/4¢10¢5 1/2¢

19 to 26.....75¢10¢7 1/4¢10¢7 1/4¢

27 to 36.....75¢10¢7 1/4¢10¢8 1/2¢

Galvanized:

6 to 18.....70¢70¢5 1/2¢

19 to 26.....72 1/2¢5 1/2¢7 1/4¢10¢

27 to 36.....72 1/2¢10¢7 1/4¢10¢5 1/2¢

Coppered:

6 to 9.....70¢5 1/2¢70¢10¢

10 to 18.....70¢10¢70¢1 1/2¢5 1/2¢

19 to 26.....75¢7 1/4¢75¢10¢7 1/4¢

27 to 36.....75¢10¢75¢10¢5 1/2¢

Tinned:

6 to 14.....75¢75¢7 1/4¢

15 to 18.....72 1/2¢10¢7 1/4¢

19 to 26.....70¢5 1/2¢70¢5 1/2¢

27 to 36.....70¢70¢5 1/2¢

Annealed Wire on Spools.....70¢5 1/2¢70

Brass and Copper Wire on Spools.....60¢5 1/2¢10¢

Brass, list Feb. 26, '96.....2 1/2¢

Copper, list Feb. 26, '96.....15¢

Cast Steel Wire.....50¢

Stubs Steel Wire.....\$6.00 to \$2.40¢

Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

**Bright Wire Goods—**

List April 1, 1901.....85¢10¢

**Wire Cloth and Netting—**

Galvanized Wire Netting.....30¢20¢85¢

Painted Screen Cloth per 100 ft.....\$1.17

**Light Hardware Grade:**

2-18 Mesh, Plain (Sc. list) sq. ft.....1 1/4¢1 3/4¢

2-18 Mesh, Galv. (Sc. list) sq. ft.....1 1/4¢1 3/4¢

**Wire, Barb—See Trade Report.**

**Wire Rope—See Rope, Wire.**

**Wrenches—**

Agricultural.....70¢10¢75¢5 1/2¢

Case lots.....75¢10¢

Acme.....60¢10¢

Alligator.....70¢

Baxter's S.....60¢10¢

Bull Dog.....70¢

Bent's & Call's.....35¢5 1/2¢

Adjustable S.....10¢

Adjustable S Pipe.....30¢10¢

Briggs's Pattern.....40¢5 1/2¢

Combination Black.....40¢5 1/2¢

Combination Bright.....40¢

Cylinder or Gas Pipe.....55¢

Extra Heavy.....45¢

Merrick's Pattern.....50¢

No. 3 Pipe, Bright.....55¢

Bindley Automatic.....30¢

Boardman's.....33 1/2¢

Coe's Genuine.....40¢10¢5 1/2¢

Coe's "Mechanics".....40¢10¢5 1/2¢

Donohue's Engineer.....40¢10¢

Eagle.....50¢10¢

Elkin Wrenches.....40¢

Elkin Monkey Wrench Pipe Jaws.....33 1/2¢

Gem Pocket.....30¢

Hercules.....40¢10¢

Knife Handle, Machinists' (W. & B.).....50¢10¢

Less than case lots.....50¢5 1/2¢

Improved Pipe (W. & B.).....50¢5 1/2¢

Solid Handle, P. S. & W.....50¢5 1/2¢

Sollers.....40¢10¢

Triumph.....40¢10¢

Vulcan Chain.....50¢

**Wrought Goods—**

Staples, Hooks, &c., list March 17

'92.....90¢30¢10¢

**Yokes Neck—**

Covert Saddlery Works, Trimmings.....1.60@3.50

Covert Saddlery Works, Neck Yoke

Centers.....70¢

**Yokes, Ox, and Ox Bows—**

Fort Madison's Farmers & Freighters

list net

**Zinc—**

Sheet.....lb 6 1/4¢@6 1/2¢

**PAINTS, OILS AND COLORS.—Wholesale Prices.****White Lead, Zinc, &c.**

Lead, English white, in Oil.....75¢@ 93¢

Lead, American White, in Oil:

Lots of 500 lb or over.....@ 8

Lots less than 500 lb.....@ 8 1/4

Lead, White, in Oil, 25 lb tin

pails, add to keg price.....@ 1/4

Lead, White, in Oil, 12 1/2 lb tin

pails, add to keg price.....@ 1

Lead, White, in Oil, 1 to 5 lb as-

sorted tins, add to keg price.....@ 1 1/4

Lead, White, Dry in bbls.....5 1/4¢@ 6

Lead, American, Terms: On lots of 500

lbs. and over, 60 days, or 3% for cash if

paid in 15 days from date of invoice.

Zinc, American, dry.....@ 45¢@ 45¢

Zinc, Paris, Red Seal, dry.....@ 35¢

Zinc, Paris, Green Seal, dry.....@ 37¢

Zinc, Antwerp, Red Seal, dry.....@ 35¢

Zinc, Antwerp, Green Seal, dry.....@ 35¢

Zinc, V. M. French, in Poppy Oil,

Green Seal:

Lots of 1 ton and over.....12 @ 12 1/4

Lots less than 1 ton.....12 1/4 @ 12 1/2

Zinc, V. M. French, in Poppy Oil,

Red Seal:

Lots of 1 ton and over.....10 1/4 @ 11 1/4

Lots less than 1 ton.....11 @ 11 1/4

Discounts.—V. M. French Zinc.—Dis-

counts to buyers of 10 bbl. lots of one or

assorted grades, 1%: 25 bbls., 2%: 50

bbls., 4%.

**Dry Colors.**

Black, Carbon.....@ 5 @ 8

Black, Drop, Amer.....@ 4 @ 7

Black, Drop, Eng.....@ 7 @ 11

Black, Ivory.....@ 12 @ 21

Lamp, Com.....@ 4 1/2 @ 6

Blue, Celestial.....@ 4 @ 6

Blue, Chinese.....@ 30 @ 35

Blue, Prussian.....@ 38 @ 34

Blue, Ultramarine.....@ 4 @ 20

Brown, Spanish.....@ 1 @ 1

Brown, Vandyke, Amer.....@ 14 @ 2 1/4

Brown, Vandyke, Foreign.....@ 2 1/4 @ 3 1/4

Carmin, No. 40.....@ 2.05 @ 2.75

Green, Chrome, ordinary.....@ 5 @ 6 1/4

Green, Chrome, pure.....@ 19 @ 20

Lead, Red, bbls. 1/2 bbls. and kegs:

Lots 500 lb or over.....@ 5 1/4

Lots less than 500 lb.....@ 6

Litharge, bbls. 1/2 bbls. and kegs:

Lots 500 lb or over.....@ 5 1/4

Lots less than 500 lb.....@ 6

Ocher, French Washed.....@ 13 @ 14

Ocher, Dutch Washed.....@ 4 1/2 @ 5

Ocher, American.....@ 10 @ 15.00

Orange Mineral, English.....@ 15¢@ 10 1/4

Orange Mineral, French.....@ 13¢@ 10 1/4

Orange Mineral, German.....@ 14¢@ 10 1/4

Orange Mineral, American.....@ 7 1/4 @ 8

Red, Indian, English.....@ 4 1/2 @ 5 1/4

Red, Indian, American.....@ 3 @ 3 1/4

Red, Turkey, English.....@ 4 @ 6

Red, Tuscan, English.....@ 7 @ 10

Red, Venetian, Amer.....@ 100 lb. 50¢1.50

Red Venetian, English.....@ 100 lb. 1.80@2.00

Sienna, Italian, Burnt and

Powdered.....@ 3 1/4 @ 7 1/4

Sienna, Ital., Raw, Powd.....@ 3 1/4 @ 7 1/4

Sienna, American, Raw.....@ 1 1/2 @ 2

Sienna, American, Burnt and

Powdered.....@ 1 1/2 @ 2

Talc, French.....@ 100 lb. \$1.25 @ 1.50

Talc, American.....@ 90 @ 1.10

Terra Alba, French.....@ 100 lb. .95 @ 1.00

Terra Alba, English.....@ .95 @ 1.00

Terra Alba, American No. 1.....@ .45 @ .50

Terra Alba, American No. 2.....@ .45 @ .50

Umber, Turkey, Raw & Powd.....@ 2 1/2 @ 3 1/4

Umber, Bnt. Amer.....@ 1 @ 2

Umber, Raw, Amer.....@ 1 1/2 @ 2

Yellow, Chrome.....@ 10 1/4 @ 25

Vermilion, American Lead.....@ 10 @ 10

Vermilion, Quicksilver, bulk.....@ 70

Vermilion, Quicksilver, bags.....@ 71

Vermilion, English, Import.....@ .80 @ .95

Vermilion, Chinese.....@ .1.05 @ 1.20

**Colors in Oil.**

Black, Lampblack.....@ 12 @ 14

Blue, Chinese.....@ 36 @ 40

Blue, Prussian.....@ 32 @ 38

Blue, Ultramarine.....@ 13 @ 16

Brown, Vandyke.....@ 9 1/4 @ 13

Green, Chrome.....@ 10 @ 12

Green, Paris.....@ 2 @ 4

Sienna, Raw.....@ 10 @ 13

Sienna, Burnt.....@ 10 @ 13

Umber, Raw.....@ 9 1/4 @ 13

Umber, Burnt.....@ 9 1/4 @ 12

**Miscellaneous.**

Barytes, Foreign, 1/2 ton.....\$19.00@21.00

Barytes, Amer. floated.....@ 19.00@20.00

Barytes, Crude, No. 1.....@ 9.00@10.00

Chalk, in bulk.....@ 2.50 @ 2.80

Chalk, in bbls.....@ 100 lb. .35

China Clay, English.....@ 100 lb. 12.00@17.50

Cobalt, Oxide.....@ 100 lb. 2.25@ 2.50

Whiting, Common.....@ 100 lb. .40 @ .60

Whiting, Gilders.....@ .45 @ .65

Whiting, extra Gilders.....@ .55 @ .75

**Putty.**

In bladders.....@ 2.25

In bulk.....@ 2.25

In cans, 1 lb to 5 lb.....@ 1.25

In cans, 12 lb to 25 lb.....@ 2.25

**Spirits Turpentine.**

In Southern bbls.....@ 47 1/2 @ 48 1/2

In machine bbls.....@ 48 @ 48 1/2

**Glue.**

Cabinet.....@ 11 1/4 @ 16

Extra White.....@ 18 @ 23

French.....@ 12 @ 40

Irish.....@ 13 1/4 @ 16

Low Grade.....@ 9 @ 12

Medium White.....@ 14 1/4 @ 16 1/4

**Animal, Fish and Vege-**

**table Oils.**

Linseed, City, raw.....@ gal. .66 @ 67

Linseed, City, bolle.....@ 68 @ 69

Linseed, State and West'n raw.....@ 65

Linseed, raw Calcut

